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AMINO ACID CONTENT OF FOODS

Home Economics Research Report No. 4

UNITED STATES DEPARTMENT OF AGRICULTURE

AMINO ACID CONTENT OF FOODS

by

M. L. Orr and B. K. Watt

Household Economics Research Division

Institute of Home Economics

Agricultural Research Service

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CONTENTS

Page

Sources of data 1
Procedures and problems in compiling data 2
Discussion of data in table 1 6
Discussion of data in table 2 46
Published sources of data used in amino acid tables 66
Literature cited 81

TABLES

Table 1.--Amino acids per gram of total nitrogen in edible portion of foods:

- Milk; milk products 8
- Eggs 10
- Meat; poultry; fish; and their products 10
- Legumes (dry seed); nuts; other dry seeds 16
- Grains and their products 24
- Fruits 32
- Vegetables 34
- Miscellaneous food items 44

Table 2.--Amino acid content of foods, 100 grams, edible portion:

- Milk; milk products 48
- Eggs 48
- Meat; poultry; fish; and their products 48
- Legumes (dry seed); nuts; other dry seeds 54
- Grains and their products 56
- Fruits 60
- Vegetables 60
- Miscellaneous food items 64

AMINO ACID CONTENT OF FOODS

The importance of having information on amino acid composition of foods was recognized years ago when investigators pointed out that the quality of a protein was related to the kinds and quantities of amino acids it contained. Before 1943 few figures on amino acids were available because analytical methods were complicated and time consuming and their use required highly specialized training.

With the development of altogether new and less costly methods, the volume of information has increased rapidly. Techniques, although not perfected, are being improved, and the volume and quality of data have increased to such an extent that it is now feasible to compile data and prepare tables of amino acid values for foods and feeds (13, 19 1/).

This publication presents the average values that at present appear to be most suitable for estimating the amino acid content of foods, dietaries, and food supplies. It also shows the extent to which data are available for specific foods, thus indicating those for which more determinations are needed.

The two tables presented here have data for the 18 most frequently occurring amino acids. The first, which is the basic table, gives average, maximum, and minimum amino acid values in grams per gram of total nitrogen in the edible portion of the food. The second, calculated from the average values in the first, has been included to provide data that may be used directly to estimate amino acid content of foods of average protein content; it gives averages in grams per 100 grams edible portion.

Part of the material, including data for 12 amino acids, was prepared in preliminary form (21) for use by a committee on protein requirements of the Food and Agriculture Organization of the United Nations, which met in Rome in October 1955. Although the publication was not intended for general circulation and only a few copies were issued, reference to it has appeared in several places. It is now superseded by this revised and more comprehensive report.

SOURCES OF DATA

The amino acid values shown in the tables in this publication have been developed from a study of original analyses of the amino acid content of foods. Research findings from a great many laboratories in this country and abroad have been used. The data have come from agricultural experiment stations, from colleges and universities, and from numerous private and industry-maintained research laboratories. The studies in which data were located had been undertaken to serve a number of purposes--among them, to obtain information on several amino acids in a series of foods, to study the effect on amino content of various production and processing treatments, to perfect details of analytical procedures as applied to different types of foods.

1/ Numbers in parentheses refer to Literature Cited, p. 81.

Most of the amino acid data used for this publication were based on work reported since 1945--nearly half since 1950. In a few scattered instances, work reported before 1945 has been included. The published reports from which data were used are listed on pages 66 to 80. In addition, unpublished data from a number of sources were made available. Appreciation is expressed to the individuals and their laboratories for the data they so generously supplied.

PROCEDURES AND PROBLEMS IN COMPILING DATA

Summarizing data from work done for a wide range of purposes and from a great variety of sources presents many problems. A search for the more important factors that influence amino acid content of food must be made and judgment exercised in making the various decisions on the handling of data.

Selection of a uniform basis for expressing data. A suitable way of expressing the amino acid values was one of the first problems encountered. Investigators differ in their choice of a basis for reporting amino acid values; before data from various sources could be collated all values had to be converted to uniform terms. After the kind of information available and the uses likely to be made of the published tables were considered, it was decided to express the values as grams of each amino acid per gram of total nitrogen present in the food. This way of expressing values is not new; it was used as early as 1937 by Csonka (9) and later by various other investigators (10, 17, 24).

A 1-gram nitrogen basis has certain obvious advantages. Total nitrogen is directly determined; it is usually reported by the investigator; it avoids the use of nitrogen conversion factors, which further research may change. The use of the nitrogen content of each sample as the basis for expressing amino acid content also eliminates variations among samples of a food due to different levels of other constituents; for example, different moisture or fat content. It was hoped that by reducing all data to this uniform basis the effect of special treatment, such as heating or dehydrating, would be more readily apparent.

Among other possibilities considered for expressing amino acid content of foods uniformly was that of using only protein and amino nitrogen rather than total nitrogen. This was rejected because data from too many good sources would have had to be excluded.

Not all data available could be converted to a common basis and used in the derivations of values presented in these tables. Unfortunately, a few sources of amino acid data did not include information on protein or nitrogen content of the samples analyzed. In some cases this information was obtained by correspondence; the remaining sources had to be omitted.

Some other reports were omitted because no units were designated or because of apparent errors in designations. These problems were encountered more often in work with amino acids than with most other nutrients. Perhaps this situation is partly due to the old procedure of reporting amino acids as "percent of the protein"--a procedure that has received much criticism. As a result a few authors adopted "16 grams of nitrogen" as their basis of reporting. This basis though clear is not altogether satisfactory, since many specific proteins contain considerably more or less nitrogen than this average amount of 16 percent. Much recalculating would be unnecessary if all investigators would express results on the basis of 1 gram of nitrogen.

Identification of samples analyzed. Accurate identification and description of the sample analyzed is essential for the correct use of data. Common names of some items differ from one locality to another even within one country. When data are compiled from global literature the problems of identification are increased. The scientific name of the item in addition to the local name is needed. For this publication the scientific names when given were checked with Standardized Plant Names (16) and both the scientific name and the corresponding common name used. However, there is some confusion in the scientific nomenclature, and additional checking of terms often was needed.

When the parts of the plant or animal tissue actually analyzed are not described, the compiler of data must decide whether or not to include the values and if they are to be included how best to classify the material. Inadequate description of the form of the food item analyzed is an added complication. Some materials analyzed are described only as fresh or as dried samples but without other specific information either as to maturity or as to proximate chemical composition. The latter if given may serve as a clue to the form of the sample.

Comparison of results obtained by different methods. Evaluating the analytical methods used for the determinations is another problem confronting those who review data in the literature. Since 1943, microbiological methods have, to a great extent, replaced the more difficult early chemical methods. The even newer chromatographic methods appear promising. Although the newer procedures are not so complex as the former chemical methods they are far from simple. At each step they require very careful attention to specific conditions for the particular reaction. Detailed discussion of many methods has been presented by Block and associates (2, 3, 4). A number of review articles on various phases of amino acid analysis have also appeared (8, 11, 12, 25).

Hydrolysis, ordinarily the first step in amino acid analysis, is one of the principal sources of error in the determination. Difficulties regarding hydrolysis have been mentioned repeatedly in the literature, yet few workers have reported any extensive preliminary tests regarding adequacy of the hydrolytic method for the particular foods under study. Some investigators have prepared their samples by chemical hydrolysis, others have used enzymes. A few have applied one of these techniques to one portion of a sample and the other to another portion. It has been suggested that chemical hydrolysis is more nearly complete than enzyme hydrolysis and more suitable for use in preparing a food sample for determination of total amino acid content. Enzyme hydrolysis, on the other hand, has been assumed to more nearly simulate the treatment of foods when digested in the body, and enzyme hydrolysates have been considered more suitable for determination of "available" amino acids. Consideration was given to the possibility of separating data by method of preparation of sample, but after a preliminary trial, this classification was abandoned.

Most of the values in the array of data used in the amino acid tables were based on microbiological analysis of chemical hydrolysates. In the relatively few instances in which split samples had been hydrolyzed, one portion chemically and the other by enzymes, the results based on analysis of the chemical hydrolysate were usually selected. Sometimes there was good agreement between results. Differences were not consistent in size or direction. If only enzyme hydrolysates had been analyzed by an investigator, results were not necessarily excluded. To have done so might have meant eliminating data showing the effect of some important variables, even omitting an item entirely.

The methods used for analysis of the hydrolysates probably varied widely in degree of accuracy. Many of the amino acid values in the array of data on which the values in this publication were based were from studies in which a large number of foods were analyzed by routine procedures. These procedures may not have been equally well adapted to the different types of food being analyzed. Greater accuracy of results from different studies can be expected with the continued discovery of the more important factors that affect results at various steps in analysis.

Many problems in method have been recognized, among which are those relating to measurement of sensitivity of specific organisms, suitability of media, optimum pH, time and temperature of incubation, formation of humin, interference of carbohydrates, conditions under which hydrolysates were stored, and purity of standards. Many improvements in amino acid procedures are anticipated as an outgrowth of the renewed interest and study of these problems.

Collaborative studies, such as the one on methionine in feeds (1), hasten the development and adoption of satisfactory procedures. Because such studies are time consuming, the results lag far behind the wants of the technician or the research worker needing the improved tools. Some laboratories have set up for their own use an internal standard; with each study of new products they have repeated the analyses of a series of items kept on hand to use as a check.

The values in the two tables should be used with the knowledge that averages have been computed even though for some foods the number of determinations was too small or the range too great to provide a satisfactory basis for an average. Considering both the problems arising from the small number of determinations for some foods and the possibility that different adaptations or modifications of a method may have been used, small differences between averages for different kinds or forms of food may not be important.

Organization of summary tables. The order in which to present the amino acid data for maximum convenience in use was another problem for which there was no clear-cut or obvious best solution. The order finally adopted and shown here has met with fewer objections than any of the many others considered.

Of the 18 amino acids included in the table, those of most importance in human nutrition were placed in the positions considered easiest to use. The essential amino acids of greatest interest appear in the columns closest to the descriptions of the food items. Cystine and tyrosine, the semidispensable amino acids, are adjacent to methionine and phenylalanine, respectively, the amino acids for which they are known to have sparing action (22, 23).

Deficiency of methionine in foods and diets is often reported; therefore special consideration needs to be given to the sparing action of the cystine in the foods. Cystine cannot completely replace methionine but at present information is inadequate for calculating the effective methionine value. On the basis of sulfur content of the molecule, 1.0 gram of cystine would be equivalent to 1.24 grams of methionine. In initial experiments with 3 young men, cystine replaced from 80 to 89 percent of the minimum need for methionine (22). Other replacement factors may be found under different experimental conditions.

In the present table a column showing the total quantity of the sulfur-containing amino acids is included. The values are the straight sums of the averages for methionine and cystine contents. Considerable change is to be expected in this column in future revisions.

The table columns for arginine and histidine follow those for the amino acids known to be essential for the human adult; histidine may be essential for the growing child. Both have been determined in a number of foods. For the remaining amino acids, for which foods were infrequently assayed, an alphabetical order was used.

NOTE

The average values for the amino acid content of foods shown in this publication are tentative. They will need to be revised as more data become available. Revision would be greatly facilitated if reprints of published reports or copies of unpublished reports were made available by the investigators. The authors would very much appreciate receiving such material.

DISCUSSION OF DATA IN TABLE 1

Table 1 is a summary of the data available on 18 amino acids expressed in terms of amino acid content per gram of nitrogen present in the food. For each food the average, the maximum, and the minimum values are shown. This table can be used to best advantage when the nitrogen content is known for the food under investigation.

The number of values selected for use in obtaining the mean is also shown in table 1 and is an indication of the extent of available data. It is obvious that amino acid values for the different foods are not equally representative, nor are the different amino acid values for one food; seldom has one sample been analyzed for all 18 of the amino acids shown in table 1. On the whole, fewer analyses have been made for tryptophan, which presents additional analytical problems, than for the other amino acids considered essential--isoleucine, leucine, lysine, methionine, phenylalanine, threonine, and valine. Fewer analyses have been reported for cystine and tyrosine content of foods than for arginine and histidine.

The maximum and minimum values shown for each amino acid in a food do not in every case include the extreme values reported. For example, averages of results were used from a large collaborative study (24) in which several laboratories participated in analysis of the same samples. Also averages from replicate determinations from a single laboratory or the preferred values, if indicated by the investigators, were used. Occasionally extreme values were arbitrarily eliminated, where they appeared to be entirely unreasonable in view of reports on other samples of the item. Even so, inspection of the maximum and minimum values shows very wide ranges, indicating the need for further intensive study.

The number of food items listed in table 1, about 200, should not be taken to mean that for only this number of items have there been analyses. If the values for related items in a group of foods were within the same range, all the data were combined. For example, in the case of milk, data were available for several forms: fresh fluid, evaporated, and dried whole and nonfat milk. When the separate ranges and averages for each of these milk items were reduced to 1 gram of nitrogen basis, it appeared that differences among items were more probably due to analytical method than to actual difference in these items. For the present it seemed preferable to derive a single mean per gram of nitrogen based on the total number of analyses rather than to keep the items separate. Likewise, for the meats, many different cuts of beef have been analyzed, but when the results were expressed in terms of grams of amino acids per gram of nitrogen it did not seem worthwhile to show the tabulation by cut. In fact, differences among averages for beef, lamb, pork, and veal were small and even further combinations might be desirable.

A great many determinations have been made on amino acids in fish. The range in values reported for each amino acid is unusually wide and there may be real differences among different species or types of fish. For histidine in particular there seems to be some evidence of species difference (20). Histidine values showed such a wide range, from 0.010 to 0.444 gram per gram of nitrogen, that for this amino acid the average, 0.176 for 153 samples, was purposely omitted. About one-half of the values were between 0.100 and 0.250 gram of histidine per gram of nitrogen. For cystine, perhaps the data should not have been averaged since cystine may be more concentrated in the skin than in the muscle. Almost no mention was made as to whether skin was or was not included in the portion of the fish analyzed. Presumably it would have been included if the investigator considered it edible. Probably the various kinds of fish could be grouped, but a satisfactory classification from the viewpoint of differences in amino acid content was not readily apparent. In this table data for all fish have been combined.

Very few determinations have been located for amino acids in different kinds of shellfish. Only for shrimp, including prawns, have data been shown separately in this table. For all other kinds of shellfish only a few scattered data on one or more amino acids were located. From the limited data available there is no way of knowing how similar the different kinds of shellfish are in amino acid content. As might be expected, foods known to be important sources of protein of high quality have been analyzed by more laboratories and for more variants than have fruits, vegetables, and nuts. Additional determinations are most needed for bread, flour, and potatoes--low protein foods that are important sources because of the relatively large quantities that are consumed. For wheat flours, for example, only 22 reports were found. Of these, only 12 were well enough defined to use in deriving values for white flour. Only one study was located on flour of intermediate extraction (14) and one study (26) on flours of 95, 70, and 30 percent extraction. Particularly helpful were unpublished data from the American Institute of Baking and a recent study by the Institute of Home Economics (14). In both of these studies amino acid values were determined for breads made from flours and wheats that had been analyzed.

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS

ITEM NUMBER AND DESCRIPTION	TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
						METHIONINE	CYSTINE	TOTAL
MILK; MILK PRODUCTS:								
MILK:								
1 Cow, whole, nonfat, evaporated, or dry:								
Average....grams..	0.090	0.294	0.407	0.626	0.496	0.156	0.057	0.213
Maximum....do...	.117	.386	.531	.779	.609	.244	.100	--
Minimum....do...	.062	.225	.275	.513	.325	.102	.025	--
Samples....number..	91	96	95	108	104	106	13	--
2 Goat....grams..	.075	.420	.168	.537	.604	.126	--	--
Samples....number..	1	1	1	1	1	1	--	--
3 Human:								
Average....grams..	.103	.284	.344	.567	.413	.128	.125	.253
Maximum....do...	.194	.400	.475	.676	.510	.249	.250	--
Minimum....do...	.058	.257	.240	.475	.353	.051	.039	--
Samples....number..	25	13	11	10	13	19	16	--
4 Indian buffalo, whole or dried:								
Average....grams..	.090	.322	.310	.639	.503	.170	.088	.258
Maximum....do...	.113	.382	.376	.698	.582	.197	.118	--
Minimum....do...	.066	.295	.204	.602	.447	.137	.054	--
Samples....number..	8	8	8	8	8	8	4	--
MILK PRODUCTS:								
5 Buttermilk:								
Average....grams..	.069	.301	.399	.633	.530	.149	.059	.208
Maximum....do...	.096	.372	.471	.784	.628	.176	.059	--
Minimum....do...	.032	.252	.294	.512	.419	.122	.059	--
Samples....number..	7	6	6	6	6	6	3	--
6 Casein:								
Average....grams..	.084	.269	.412	.632	.504	.194	.024	.218
Maximum....do...	.138	.307	.519	.942	.610	.252	.034	--
Minimum....do...	.060	.225	.256	.517	.393	.134	.019	--
Samples....number..	48	42	33	34	40	53	22	--
Cheese:								
7 Cheddar, other ripened cheeses 1/, and processed cheese foods:								
Average....grams..	.087	.237	.430	.622	.468	.166	.036	.202
Maximum....do...	.117	.282	.708	.784	.539	.215	.066	--
Minimum....do...	.069	.152	.309	.457	.343	.123	.014	--
Samples....number..	27	15	12	12	12	12	7	--
8 Cottage:								
Average....grams..	.067	.298	.371	.685	.536	.176	.055	.231
Maximum....do...	.073	.302	.449	.780	.596	.198	.064	--
Minimum....do...	.064	.294	.302	.592	.472	.161	.046	--
Samples....number..	3	3	3	3	3	3	4	--
9 Cream cheese:								
Average....grams..	.057	.289	.368	.654	.511	.162	.060	.222
Maximum....do...	.067	.314	.476	.686	.571	.181	.095	--
Minimum....do...	.048	.267	.305	.629	.476	.152	.038	--
Samples....number..	3	3	3	3	3	3	4	--

1/ Includes such kinds as Blue, Limburger, and Swiss.

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
											1
0.309	0.325	0.438	0.233	0.168	0.220	0.465	1.491	0.126	0.709	0.376	Average
.423	.400	.541	.315	.310	.253	.535	2.199	.150	1.224	.545	Maximum
.236	.256	.281	.171	.077	.184	.371	1.337	.107	.448	.266	Minimum
100	47	98	99	98	4	6	8	6	6	6	Samples
.235	--	.269	.336	.131	--	--	--	--	--	--	2
1	--	1	1	1	--	--	--	--	---	--	Samples
											3
.272	.323	.391	.253	.138	.221	.498	1.045	.135	.473	.256	Average
.369	.620	.619	.425	.175	.241	.583	1.184	.143	.500	.286	Maximum
.142	.150	.283	.172	.061	.200	.341	.797	.123	.411	.173	Minimum
13	11	12	15	15	5	6	6	6	6	6	Samples
											4
.269	--	.388	.206	.131	--	--	--	--	--	--	Average
.317	--	.482	.221	.145	--	--	--	--	--	--	Maximum
.181	--	.343	.193	.123	--	--	--	--	--	--	Minimum
8	--	8	5	5	--	--	--	--	--	--	Samples
											5
.338	.249	.477	.306	.180	--	--	1.129	--	--	.242	Average
.347	.333	.510	.644	.216	--	--	--	--	--	--	Maximum
.258	.086	.429	.194	.153	--	--	--	--	--	--	Minimum
6	5	5	6	5	--	--	1	--	--	1	Samples
											6
.339	.366	.465	.256	.190	.211	.465	1.450	.125	.739	.418	Average
.400	.431	.601	.456	.265	.238	.522	1.860	.139	.835	.591	Maximum
.250	.304	.347	.216	.131	.151	.419	1.300	.114	.674	.327	Minimum
37	30	31	32	36	6	5	21	11	10	14	Samples
											7
.342	.305	.458	.233	.208	.179	.372	1.745	.098	.731	.384	Average
.478	.384	.560	.294	.243	.181	.517	1.995	.110	.787	.603	Maximum
.221	.115	.362	.172	.171	.175	.199	1.564	.089	.670	.201	Minimum
12	7	12	12	12	3	3	3	3	3	3	Samples
											8
.344	.344	.367	.301	.206	--	--	--	--	--	--	Average
.362	.399	.367	.312	.229	--	--	--	--	--	--	Maximum
.326	.308	.367	.289	.192	--	--	--	--	--	--	Minimum
3	3	3	3	3	--	--	--	--	--	--	Samples
											9
.388	.289	.381	.222	.197	--	--	--	--	--	--	Average
.391	.314	.457	.257	.257	--	--	--	--	--	--	Maximum
.381	.267	.295	.191	.162	--	--	--	--	--	--	Minimum
3	3	3	3	3	--	--	--	--	--	--	Samples

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

ITEM NUMBER AND DESCRIPTION	TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
						METHIONINE	CYSTINE	TOTAL
MILK; MILK PRODUCTS--Continued								
MILK PRODUCTS--Continued								
10 Lactalbumin:								
Average..........grams..	0.143	0.340	0.403	0.801	0.588	0.146	0.221	0.367
Maximum..........do...	.188	.425	.544	1.166	.787	.162	.252	--
Minimum..........do...	.112	.288	.282	.650	.413	.101	.169	--
Samples..........number..	11	9	7	6	11	10	4	--
11 Whey, dried:								
Average..........grams..	.075	.346	.375	.533	.393	.096	.128	.224
Maximum..........do...	.129	.406	.400	.581	.523	.148	.162	--
Minimum..........do...	.037	.296	.345	.444	.296	.040	.094	--
Samples..........number..	5	4	6	6	5	7	2	--
EGGS, CHICKEN:								
12 Whole, raw or dried:								
Average..........grams..	.103	.311	.415	.550	.400	.196	.146	.342
Maximum..........do...	.129	.456	.525	.606	[illegible]	.288	.184	--
Minimum..........do...	.071	.236	.319	.488	.316	.088	.083	--
Samples..........number..	27	27	16	16	26	34	24	--
13 Whites, raw or dried:								
Average..........grams..	.095	.276	.404	.550	.375	.243	.152	.395
Maximum..........do...	.142	.325	.456	.669	.505	.342	.321	--
Minimum..........do...	.068	.219	.286	.444	.239	.162	.056	--
Samples..........number..	54	22	14	16	56	61	51	--
14 Yolks, raw or dried:								
Average..........grams..	.090	.317	.382	.526	.412	.160	.105	.265
Maximum..........do...	.159	.368	.431	.531	.549	.226	.197	--
Minimum..........do...	.066	.219	.252	.519	.312	.121	.089	--
Samples..........number..	36	6	4	1	29	47	42	--
MEAT; POULTRY; FISH AND SHELLFISH; THEIR PRODUCTS:								
MEAT:								
15 Beef cuts, 2/ fresh or canned:								
Average..........grams..	.073	.276	.327	.512	.546	.155	.079	.234
Maximum..........do...	.119	.350	.374	.622	.755	.198	.114	--
Minimum..........do...	.040	.230	.175	.411	.436	.118	.052	--
Samples..........number..	71	44	42	46	45	47	29	--
16 Lamb cuts, 2/ fresh or canned:								
Average..........grams..	.081	.286	.324	.484	.506	.150	.082	.232
Maximum..........do...	.100	.330	.393	.535	.586	.163	.106	--
Minimum..........do...	.064	.243	.265	.423	.411	.138	.049	--
Samples..........number..	23	22	17	18	17	21	14	--
Pork cuts:								
17 Fresh pork, 2/ raw or canned:								
Average..........grams..	.081	.290	.321	.460	.513	.156	.073	.229
Maximum..........do...	.088	.336	.395	.540	.616	.214	.098	--
Minimum..........do...	.046	.219	.247	.436	.462	.112	.042	--
Samples..........number..	27	22	17	17	21	24	17	--
Cured pork:								
18 Bacon, raw..........grams..	.065	.210	.274	.500	.403	.097	.073	.170
Samples..........number..	1	1	1	1	1	1	1	--
19 Fatback, raw..........grams..	.010	.226	.176	.588	.508	.088	.069	.157
Samples..........number..	1	1	1	1	1	1	1	--

2/ Based on data from many cuts.

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
											10
0.283	0.247	0.369	0.227	0.124	0.412	0.643	1.044	--	0.268	0.268	Average
.350	.321	.425	.275	.144	--	--	1.170	--	--	--	Maximum
.204	.181	.268	.200	.094	--	--	.918	--	--	--	Minimum
8	7	6	8	8	1	1	2	--	1	1	Samples
											11
.165	.067	.327	.120	.081	--	--	.695	--	--	.191	Average
.206	.124	.400	.156	.098	--	--	.760	--	--	.222	Maximum
.120	.037	.280	.080	.074	--	--	.630	--	--	.160	Minimum
6	3	6	5	5	--	--	2	--	--	2	Samples
											12
.361	.269	.464	.410	.150	--	.438	.773	0.221	.265	.525	Average
.500	.372	.549	.606	.228	--	.673	.788	.247	.280	.618	Maximum
.279	.163	.414	.350	.086	--	.356	.744	.162	.256	.469	Minimum
26	18	16	21	26	--	4	4	5	4	10	Samples
											13
.399	.260	.487	.367	.135	.472	.492	.860	.234	.236	.491	Average
.506	.335	.581	.411	.175	.631	.687	1.127	.250	.268	.670	Maximum
.281	.189	.381	.262	.075	.361	.356	.443	.203	.205	.400	Minimum
20	16	16	20	20	4	6	12	6	8	12	Samples
											14
.275	.290	.430	.434	.141	--	.344	.748	.219	.277	.554	Average
.288	.299	.462	.450	.181	--	.350	.762	.225	.281	.566	Maximum
.233	.281	.366	.417	.094	--	.338	.738	.206	.269	.538	Minimum
6	5	4	7	6	--	3	3	3	3	6	Samples
											15
.257	.212	.347	.403	.217	.361	.583	.946	.387	.308	.262	Average
.366	.269	.436	.469	.278	.400	.694	1.070	.536	.402	.300	Maximum
.212	.156	.306	.337	.112	.205	.525	.769	.263	.220	.237	Minimum
46	35	42	48	53	7	25	23	26	23	21	Samples
											16
.254	.217	.308	.407	.174	.349	.576	.948	.365	.289	.250	Average
.306	.306	.346	.474	.214	.388	.731	1.130	.447	.328	.312	Maximum
.230	.179	.286	.374	.141	.300	.463	.800	.212	.256	.229	Minimum
19	13	18	17	21	4	11	11	11	11	11	Samples
											17
.246	.223	.325	.383	.216	.290	.592	.956	.310	.276	.254	Average
.279	.276	.364	.434	.294	.400	.699	1.160	.407	.316	.331	Maximum
.219	.160	.301	.281	.135	.185	.521	.831	.151	.256	.201	Minimum
20	15	17	19	25	5	11	11	12	11	12	Samples
.298	.161	.298	.427	.169	--	.589	.702	.589	.331	.242	18
1	1	1	1	1	--	1	1	1	1	1	Samples
.252	.084	.269	.608	.056	--	--	--	--	--	--	19
1	1	1	1	1	--	--	--	--	--	--	Samples

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

ITEM NUMBER AND DESCRIPTION	TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
						METHIONINE	CYSTINE	TOTAL
MEAT; POULTRY; FISH AND SHELLFISH; THEIR PRODUCTS--Continued								
MEAT--Continued								
Pork cuts--Continued								
Cured pork--Continued								
20 Ham and other cured pork, raw, cooked, canned:								
Average..........................grams..	0.060	0.256	0.311	0.483	0.525	0.152	0.101	0.253
Maximum..........................do...	.082	.306	.381	.519	.707	.175	.108	--
Minimum..........................do...	.044	.181	.269	.419	.418	.113	.094	--
Samples..........................number..	25	25	29	29	27	26	5	--
21 Rabbit, muscle:								
Average..........................grams..	--	.304	.322	.487	.541	.161	--	--
Maximum..........................do...	--	.312	.325	.494	.551	.169	--	--
Minimum..........................do...	--	.300	.318	.477	.523	.156	--	--
Samples..........................number..	--	3	3	3	3	3	--	--
22 Veal cuts, fresh or canned:								
Average..........................grams..	.082	.271	.330	.458	.522	.143	.074	.217
Maximum..........................do...	.106	.319	.394	.505	.601	.152	.095	--
Minimum..........................do...	.065	.238	.281	.382	.464	.124	.060	--
Samples..........................number..	12	13	8	9	8	7	10	--
POULTRY:								
23 Chicken, muscle without skin:								
Average..........................grams..	.076	.266	.330	.452	.549	.163	.084	.247
Maximum..........................do...	.094	.293	.356	.469	.622	.195	.089	--
Minimum..........................do...	.058	.238	.288	.434	.469	.134	.078	--
Samples..........................number..	4	6	6	6	6	6	2	--
24 Duck, muscle without skin:								
Average..........................grams..	--	.273	.324	.484	.538	.155	--	--
Maximum..........................do...	--	.276	.327	.485	.549	.156	--	--
Minimum..........................do...	--	.270	.320	.483	.528	.154	--	--
Samples..........................number..	--	2	2	2	2	2	--	--
25 Turkey, muscle without skin:								
Average..........................grams..	--	.264	.328	.478	.566	.173	.086	.259
Maximum..........................do...	--	.294	.346	.500	.603	.184	.094	--
Minimum..........................do...	--	.216	.311	.456	.527	.168	.079	--
Samples..........................number..	--	4	4	4	4	4	2	--
FISH AND SHELLFISH:								
26 Fish, raw or canned:								
Average..........................grams..	.062	.271	.317	.472	.548	.182	.084	.266
Maximum..........................do...	.106	.506	.496	.781	1.238	.292	.215	--
Minimum..........................do...	.017	.131	.156	.374	.230	.053	.031	--
Samples..........................number..	182	155	133	139	157	185	42	--
Shellfish:								
27 Shrimp, including prawns, raw or canned:								
Average..........................grams..	.056	.252	.324	.563	.453	.177	.142	.319
Maximum..........................do...	.069	.288	.362	.894	.594	.231	.287	--
Minimum..........................do...	.025	.183	.300	.488	.253	.138	.048	--
Samples..........................number..	8	8	7	8	12	8	8	--
28 Other shellfish:								
Average..........................grams..	.054	.186	.296	.535	.403	.163	.112	.275
Maximum..........................do...	.104	.331	.309	.706	.475	.273	.172	--
Minimum..........................do...	.022	.120	.269	.449	.321	.106	.090	--
Samples..........................number..	7	9	3	3	5	16	8	--

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
											20
0.239	0.241	0.325	0.395	0.201	--	0.561	0.884	0.412	0.313	0.257	Average
.277	.250	.356	.464	.231	--	.632	.988	.477	.318	.272	Maximum
.206	.231	.287	.338	.169	--	.481	.706	.369	.302	.227	Minimum
25	5	29	25	25	--	15	15	15	5	5	Samples
											21
.236	--	.304	.350	.141	--	.633	1.080	.285	--	--	Average
.238	--	.306	.352	.144	--	.659	1.119	.295	--	--	Maximum
.233	--	.301	.347	.136	--	.600	1.060	.267	--	--	Minimum
3	--	3	3	3	--	3	3	3	--	--	Samples
											22
.254	.225	.323	.407	.201	0.371	.616	.975	.299	.252	.275	Average
.276	.304	.358	.471	.226	.394	.694	1.079	.426	.301	.306	Maximum
.244	.182	.281	.327	.149	.338	.567	.833	.256	.218	.225	Minimum
10	8	9	10	10	6	7	7	7	7	7	Samples
											23
.246	.220	.307	.395	.180	--	.614	1.004	.418	--	--	Average
.258	.223	.336	.441	.233	--	.622	1.036	.429	--	--	Maximum
.232	.216	.285	.370	.137	--	.606	.971	.407	--	--	Minimum
6	2	6	6	6	--	2	2	2	--	--	Samples
											24
.246	--	.300	.380	.142	--	.658	1.062	.315	--	--	Average
.247	--	.307	.381	.142	--	.659	1.070	.340	--	--	Maximum
.244	--	.294	.378	.142	--	.657	1.054	.290	--	--	Minimum
2	--	2	2	2	--	2	2	2	--	--	Samples
											25
.250	--	.309	.394	.169	--	.632	1.112	.338	--	--	Average
.274	--	.331	.442	.241	--	.636	1.123	.347	--	--	Maximum
.233	--	.290	.361	.135	--	.629	1.102	.328	--	--	Minimum
4	--	4	4	4	--	2	2	2	--	--	Samples
											26
.232	.169	.333	.352	--	--	.551	.796	.345	.381	.193	Average
.320	.294	.619	.600	.444	--	.638	.950	.459	.411	.195	Maximum
.125	.072	.181	.162	.010	--	.462	.621	.252	.353	.188	Minimum
138	60	139	134	153	--	43	43	43	3	3	Samples
											27
.292	.243	.307	.553	.227	.308	.581	.969	.398	--	--	Average
.400	.320	.331	.653	.540	.360	.606	1.000	.444	--	--	Maximum
.238	.160	.256	.469	.100	.267	.556	.938	.350	--	--	Minimum
11	4	7	13	13	4	3	3	3	--	--	Samples
											28
.210	.183	.448	.388	.090	--	.618	.763	.305	.390	.206	Average
.236	.207	.585	.476	.112	--	.703	.769	.321	.419	.218	Maximum
.169	.158	.181	.329	.075	--	.532	.737	.289	.362	.195	Minimum
3	4	3	6	6	--	2	2	2	2	2	Samples

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

ITEM NUMBER AND DESCRIPTION		TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
							METHIONINE	CYSTINE	TOTAL
	MEAT; POULTRY; FISH AND SHELLFISH; THEIR PRODUCTS--Continued								
	PRODUCTS FROM MEAT, POULTRY, AND FISH:								
29	Brains:								
	Average.........................grams..	0.083	0.297	0.303	0.508	0.457	0.132	0.087	0.219
	Maximum.........................do...	.102	.349	.350	.594	.581	.166	.102	--
	Minimum.........................do...	.062	.244	.238	.266	.374	.110	.081	--
	Samples.........................number..	15	16	12	13	14	18	4	--
30	Chitterlings.........................grams..	.068	.289	.224	.332	.487	.140	.079	.219
	Samples.........................number..	1	1	1	1	1	1	1	--
31	Fish flour:								
	Average.........................grams..	.062	.360	.348	.509	.607	.166	--	--
	Maximum.........................do...	.076	.449	.468	.846	1.058	.197	--	--
	Minimum.........................do...	.054	.188	.280	.392	.493	.143	--	--
	Samples.........................number..	7	8	7	8	8	8	--	--
32	Gelatin:								
	Average.........................grams..	.0004	.124	.088	.190	.274	.051	.005	.056
	Maximum.........................do...	.0020	.169	.136	.250	.380	.079	.006	--
	Minimum.........................do...	.000	.094	.038	.138	.223	.025	.004	--
	Samples.........................number..	8	11	13	14	15	15	4	--
33	Gizzard, chicken:								
	Average.........................grams..	.056	.290	.296	.457	.424	.150	.059	.209
	Maximum.........................do...	.064	.297	.318	.539	.473	.161	--	--
	Minimum.........................do...	.048	.283	.275	.375	.375	.138	--	--
	Samples.........................number..	2	2	2	2	2	2	1	--
34	Heart:								
	Average.........................grams..	.081	.287	.317	.558	.513	.149	.062	.211
	Maximum.........................do...	.089	.396	.409	.690	.665	.193	.084	--
	Minimum.........................do...	.058	.241	.274	.497	.434	.128	.055	--
	Samples.........................number..	32	29	25	26	27	32	6	--
35	Kidney:								
	Average.........................grams..	.092	.277	.304	.542	.453	.128	.076	.204
	Maximum.........................do...	.130	.308	.388	.625	.525	.168	.088	--
	Minimum.........................do...	.065	.219	.271	.483	.388	.105	.062	--
	Samples.........................number..	32	22	16	17	18	24	5	--
36	Liver:								
	Average.........................grams..	.094	.297	.327	.577	.468	.147	.077	.224
	Maximum.........................do...	.113	.369	.406	.738	.588	.258	.123	--
	Minimum.........................do...	.046	.206	.250	.471	.345	.121	.062	--
	Samples.........................number..	43	41	36	36	37	42	7	--
37	Pancreas:								
	Average.........................grams..	.081	.290	.316	.488	.461	.113	--	--
	Maximum.........................do...	.101	.364	.383	.531	.512	.120	--	--
	Minimum.........................do...	.048	.225	.256	.425	.388	.106	--	--
	Samples.........................number..	4	5	5	5	5	4	--	--
38	Pork and beef, canned:								
	Average.........................grams..	.066	.270	.319	.520	.588	.143	.114	.257
	Maximum.........................do...	--	--	--	--	.679	.151	--	--
	Minimum.........................do...	--	--	--	--	.498	.135	--	--
	Samples.........................number..	1	1	1	1	2	2	1	--
39	Potted meat, canned.........................grams..	.058	.257	.249	.467	.412	.140	--	--
	Samples.........................number..	1	1	1	1	1	1	--	--

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
											29
0.304	0.260	0.322	0.369	0.167	0.360	0.682	0.875	0.252	0.287	0.380	Average
.364	.319	.388	.412	.194	.412	.747	.977	.300	.305	.454	Maximum
.238	.238	.100	.319	.144	.276	.625	.731	.178	.275	.270	Minimum
16	6	13	16	17	4	4	4	4	3	4	Samples
.261	.166	.336	1.022	.123	--	--	--	--	--	--	30
1	1	1	1	1	--	--	--	--	--	--	Samples
											31
.234	--	.322	.428	.106	--	--	--	--	--	--	Average
.292	--	.396	.500	.150	--	--	--	--	--	--	Maximum
.084	--	.267	.345	.076	--	--	--	--	--	--	Minimum
8	--	8	7	7	--	--	--	--	--	--	Samples
											32
.132	.026	.157	.510	.050	.550	.372	.614	1.478	.893	.214	Average
.158	.051	.214	.625	.062	.624	.388	.653	1.700	1.023	.254	Maximum
.112	.012	.131	.450	.037	.438	.361	.512	1.199	.822	.173	Minimum
15	12	12	16	16	7	6	7	10	6	8	Samples
											33
.262	.184	.302	.471	.130	--	--	--	--	--	--	Average
.326	--	.369	.594	.155	--	--	--	--	--	--	Maximum
.199	--	.236	.347	.106	--	--	--	--	--	--	Minimum
2	1	2	2	2	--	--	--	--	--	--	Samples
											34
.283	.232	.360	.395	.160	.412	.659	.930	.344	.301	.284	Average
.319	.276	.440	.465	.191	.425	.703	1.090	.465	.309	.294	Maximum
.257	.182	.306	.333	.109	.391	.594	.799	.293	.288	.277	Minimum
29	6	26	29	32	3	12	12	12	3	3	Samples
											35
.294	.232	.365	.389	.157	.380	.641	.816	.374	.323	.353	Average
.342	.289	.414	.433	.188	.394	.703	.859	.400	.344	.362	Maximum
.269	.164	.325	.362	.135	.359	.612	.762	.359	.312	.338	Minimum
20	6	17	22	20	3	4	4	4	3	3	Samples
											36
.315	.234	.393	.381	.166	.400	.644	.850	.380	.321	.327	Average
.379	.287	.441	.554	.238	.406	.723	1.027	.596	.362	.344	Maximum
.269	.205	.322	.212	.116	.394	.511	.621	.314	.273	.290	Minimum
41	10	36	35	39	3	15	15	16	4	4	Samples
											37
.260	.273	.335	.357	.123	--	.600	.524	.381	--	--	Average
.288	--	.356	.429	.144	--	--	.644	--	--	--	Maximum
.238	--	.306	.319	.091	--	--	.403	--	--	--	Minimum
5	1	5	5	5	--	1	2	1	--	--	Samples
											38
.253	.249	.354	.459	.201	--	.651	.879	.489	.362	.262	Average
--	--	--	--	--	--	--	--	--	--	--	Maximum
--	--	--	--	--	--	--	--	--	--	--	Minimum
1	1	1	1	1	--	1	1	1	1	1	Samples
.249	--	.366	.389	.125	--	.514	.677	.658	.447	--	39
1	--	1	1	1	--	1	1	1	1	--	Samples

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

ITEM NUMBER AND DESCRIPTION	TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
						METHIONINE	CYSTINE	TOTAL
MEAT; POULTRY; FISH AND SHELLFISH; THEIR PRODUCTS--Continued								
PRODUCTS FROM MEAT; POULTRY AND FISH--Continued								
Sausage:								
40 Head cheese.....grams..	0.033	0.174	0.212	0.394	0.378	0.104	0.087	0.191
Samples.....number..	1	1	1	1	1	1	1	--
41 Sausage containing liver:								
Average.....grams..	.070	.271	.306	.524	.487	.130	.076	.206
Maximum.....do...	.080	.299	.384	.607	.564	.132	.125	--
Minimum.....do...	.051	.225	.239	.462	.375	.124	.051	--
Samples.....number..	4	4	4	4	4	4	5	--
42 Other sausage:								
Average.....grams..	.053	.256	.303	.448	.503	.132	.078	.210
Maximum.....do...	.066	.327	.343	.498	.629	.162	.106	--
Minimum.....do...	.032	.204	.243	.408	.443	.094	.047	--
Samples.....number..	14	14	12	14	14	12	16	--
43 Tongue, fresh or smoked:								
Average.....grams..	.075	.270	.302	.490	.520	.136	.079	.215
Maximum.....do...	.090	.304	.359	.561	.634	.156	.092	--
Minimum.....do...	.065	.200	.256	.396	.444	.117	.066	--
Samples.....number..	19	10	8	9	9	11	5	--
44 Veal and pork loaf, canned.....grams..	.072	.228	.312	.449	.457	.152	.076	.228
Samples.....number..	1	1	1	1	1	1	1	1
LEGUMES (DRY SEED); COMMON NUTS; OTHER NUTS AND DRY SEEDS; THEIR PRODUCTS:								
LEGUME SEEDS AND THEIR PRODUCTS:								
Beans, includes kidney, navy, pinto, red, others (Phaseolus vulgaris):								
45 Raw:								
Average.....grams..	.058	.271	.355	.537	.464	.063	.062	.125
Maximum.....do...	.102	.335	.420	.825	.594	.115	.126	--
Minimum.....do...	.025	.162	.269	.450	.331	.033	.037	--
Samples.....number..	49	16	14	15	26	25	9	--
46 Baked with pork, canned:								
Average.....grams..	.061	.295	.314	.524	.381	.064	.019	.083
Maximum.....do...	.067	.324	.333	.552	--	.076	.029	--
Minimum.....do...	.048	.276	.295	.495	--	.048	.009	--
Samples.....number..	3	3	3	3	3	3	4	--
47 Baked with tomato sauce, canned:								
Average.....grams..	.056	.261	.275	.464	.311	.047	.025	.072
Maximum.....do...	.067	.275	.317	.550	.342	.058	--	--
Minimum.....do...	.042	.250	.242	.400	.292	.042	--	--
Samples.....number..	3	3	3	3	3	3	3	--
48 Black gram (Phaseolus mungo):								
Average.....grams..	.064	.212	.368	.546	.400	.088	.076	.164
Maximum.....do...	.130	.270	.454	.636	.503	.142	.138	--
Minimum.....do...	.025	.136	.309	.450	.319	.047	.042	--
Samples.....number..	6	6	3	3	6	7	4	--
49 Broad beans (Vicia faba):								
Average.....grams..	.058	.204	.392	.544	.351	.026	.044	.070
Maximum.....do...	.081	.244	.438	.612	.356	.034	.068	--
Minimum.....do...	.019	.165	.346	.475	.346	.019	.021	--
Samples.....number..	5	2	2	2	2	2	2	--

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
0.237	0.237	0.257	0.448	0.116	--	0.556	0.660	0.751	0.506	0.245	40
1	1	1	1	1	--	1	1	1	1	1	Samples
											41
.284	.191	.388	.387	.186	--	.605	.715	.560	.395	.305	Average
.300	.285	.470	.470	.218	--	--	--	--	--	--	Maximum
.274	.128	.342	.346	.155	--	--	--	--	--	--	Minimum
4	4	4	4	4	--	1	1	1	1	1	Samples
											42
.228	.203	.314	.434	.168	--	.589	.854	.524	.356	.256	Average
.283	.248	.386	.488	.188	--	.650	.996	.616	.412	.271	Maximum
.164	.149	.224	.383	.140	--	.560	.764	.430	.324	.241	Minimum
14	14	12	10	12	--	7	7	7	7	7	Samples
											43
.252	.209	.320	.406	.157	0.398	.616	.955	.418	.350	.291	Average
.289	.228	.350	.458	.180	.425	.699	1.100	.469	.368	.325	Maximum
.204	.192	.284	.362	.122	.357	.556	.767	.349	.338	.251	Minimum
11	5	9	11	14	3	5	5	5	4	4	Samples
.225	.170	.348	.333	.141	--	.507	.739	.536	.370	.239	44
1	1	1	1	1	--	1	1	1	1	1	Samples
											45
.345	.241	.379	.376	.178	.356	.419	1.000	.106	.269	.325	Average
.462	.369	.445	.588	.229	--	--	--	--	--	--	Maximum
.206	.131	.300	.294	.094	--	--	--	--	--	--	Minimum
24	19	16	18	16	1	1	1	1	1	1	Samples
											46
.359	.178	.336	.270	.200	--	--	--	--	--	--	Average
.429	.200	.371	.305	.200	--	--	--	--	--	--	Maximum
.324	.162	.305	.219	.200	--	--	--	--	--	--	Minimum
3	3	3	3	3	--	--	--	--	--	--	Samples
											47
.281	.158	.264	.367	.144	--	--	--	--	--	--	Average
.308	.183	.275	.367	.158	--	--	--	--	--	--	Maximum
.267	.133	.250	.367	.133	--	--	--	--	--	--	Minimum
3	3	3	3	3	--	--	--	--	--	--	Samples
											48
.329	.146	.384	.411	.148	.237	.583	.878	.260	.253	.253	Average
.365	--	.433	.466	.171	--	--	--	--	--	--	Maximum
.248	--	.328	.356	.125	--	--	--	--	--	--	Minimum
5	1	4	2	2	1	1	1	1	1	1	Samples
											49
.260	.169	.314	.438	.184	.165	.405	.855	.233	.283	.357	Average
.306	.192	.321	.494	.227	--	--	--	--	--	--	Maximum
.215	.144	.306	.371	.112	--	--	--	--	--	--	Minimum
2	4	2	4	4	1	1	1	1	1	1	Samples

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

ITEM NUMBER AND DESCRIPTION		TRYPTO-PHAN	THREO-NINE	ISO-LEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
							METH-IONINE	CYSTINE	TOTAL
	LEGUMES (DRY SEED); COMMON NUTS; OTHER NUTS AND DRY SEEDS; THEIR PRODUCTS--Continued								
	LEGUME SEEDS AND THEIR PRODUCTS--Continued								
	Chickpeas (Cicer arietinum):								
50	Average..........................grams..	0.051	0.222	0.359	0.462	0.431	0.083	0.089	0.172
	Maximum..........................do...	.094	.298	.388	.501	.573	.133	.150	--
	Minimum..........................do...	.025	.169	.319	.421	.336	.046	.041	--
	Samples..........................number..	11	8	4	3	10	11	7	--
51	Cowpeas (Vigna spp.):								
	Average..........................grams..	.060	.246	.303	.468	.407	.096	.081	.177
	Maximum..........................do...	.098	.284	.325	.501	.533	.203	.117	--
	Minimum..........................do...	.037	.203	.290	.431	.232	.043	.043	--
	Samples..........................number..	14	8	8	8	14	14	6	--
52	Dolichos, twinflower (Dolichos biflorus):								
	Average..........................grams..	.064	.242	.419	.494	.492	.085	.139	.224
	Maximum..........................do...	.119	.247	--	--	.519	.165	.193	--
	Minimum..........................do...	.034	.238	--	--	.466	.041	.102	--
	Samples..........................number..	3	2	1	1	2	3	3	--
53	Lentils (Lens culinaris):								
	Average..........................grams..	.054	.224	.329	.440	.382	.045	.051	.096
	Maximum..........................do...	.125	.312	.408	.532	.462	.095	.111	--
	Minimum..........................do...	.011	.149	.272	.339	.306	.025	.019	--
	Samples..........................number..	11	10	7	6	10	10	5	--
54	Lima beans (Phaseolus lunatus):								
	Average..........................grams..	.059	.296	.362	.520	.416	.100	.094	.194
	Maximum..........................do...	.071	.298	.374	.529	.474	.121	.115	--
	Minimum..........................do...	.044	.295	.349	.511	.354	.078	.073	--
	Samples..........................number..	4	2	2	3	6	6	2	--
55	Lupine (Lupinus spp.)..........................grams..	--	.213	.313	.380	.280	.022	--	--
	Samples..........................number..	--	1	1	1	1	1	--	--
56	Moth beans (Phaseolus aconitifolius).....grams..	.042	--	.280	.380	.308	.049	.028	.077
	Samples..........................number..	1	--	1	1	1	1	1	--
57	Mung beans (Phaseolus aureus):								
	Average..........................grams..	.046	.196	.346	.564	.427	.068	.039	.107
	Maximum..........................do...	.066	.254	.392	.772	.578	.117	.074	--
	Minimum..........................do...	.028	.118	.299	.478	.238	.039	.018	--
	Samples..........................number..	6	6	2	5	8	7	5	--
58	Peanuts, flour, meal, peanut butter (Arachis hypogaea):								
	Average..........................grams..	.069	.168	.257	.380	.223	.055	.094	.149
	Maximum..........................do...	.125	.206	.315	.475	.283	.106	.120	--
	Minimum..........................do...	.035	.100	.169	.281	.156	.032	.056	--
	Samples..........................number..	26	21	22	23	26	24	8	--
59	Peas (Pisum sativum):								
	Average..........................grams..	.066	.241	.352	.517	.458	.075	.081	.156
	Maximum..........................do...	.124	.306	.446	.638	.554	.155	.125	--
	Minimum..........................do...	.016	.175	.288	.425	.394	.019	.029	--
	Samples..........................number..	14	10	7	7	10	55	30	--

TABLE 1.—AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS—CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
											50
0.304	0.208	0.308	0.466	0.168	0.213	0.588	0.676	0.224	0.368	0.246	Average
.423	.306	.394	.562	.210	--	--	--	--	--	--	Maximum
.234	.125	.250	.267	.131	--	--	--	--	--	--	Minimum
7	4	5	8	5	1	1	1	1	1	1	Samples
											51
.327	.185	.353	.402	.189	--	--	--	--	--	--	Average
.364	--	.396	.472	.204	--	--	--	--	--	--	Maximum
.311	--	.327	.338	.162	--	--	--	--	--	--	Minimum
8	1	8	8	8	--	--	--	--	--	--	Samples
											52
.430	.162	.372	.356	.188	.276	.852	.946	.222	.406	.358	Average
.531	--	.406	.375	--	--	--	--	--	--	--	Maximum
.330	--	.338	.338	--	--	--	--	--	--	--	Minimum
2	1	2	2	1	1	1	1	1	1	1	Samples
											53
.276	.166	.340	.477	.137	.222	.730	.925	.325	.270	.285	Average
.332	.227	.403	.579	.160	--	--	--	--	--	--	Maximum
.234	.112	.301	.294	.106	--	--	--	--	--	--	Minimum
9	4	8	7	6	1	1	1	1	1	1	Samples
											54
.369	.164	.392	.397	.202	--	--	--	--	--	--	Average
.386	--	.485	.428	.214	--	--	--	--	--	--	Maximum
.352	--	.355	.368	.189	--	--	--	--	--	--	Minimum
2	1	4	5	2	--	--	--	--	--	--	Samples
.246	--	.257	.526	.157	--	.582	1.320	.224	--	--	55
1	--	1	1	1	--	1	1	1	--	--	Samples
.257	.319	.178	--	.185	--	--	--	--	--	--	56
1	1	1	--	1	--	--	--	--	--	--	Samples
											57
.299	.100	.370	.351	.139	.187	.536	.720	.115	.274	.188	Average
.389	.115	.400	.640	.168	--	--	.731	--	.329	.198	Maximum
.172	.086	.330	.160	.095	--	--	.708	--	.219	.178	Minimum
7	2	5	4	3	1	1	2	1	2	2	Samples
											58
.316	.224	.311	.669	.152	.222	.878	1.204	.347	.318	.412	Average
.388	.289	.469	.862	.198	.262	.944	1.360	.356	.325	--	Maximum
.269	.175	.231	.537	.112	.181	.811	1.090	.336	.310	--	Minimum
21	8	23	22	21	2	2	4	3	2	1	Samples
											59
.315	.252	.350	.552	.171	.252	.766	1.466	.362	.352	.243	Average
.401	.362	.488	.671	.288	.270	.990	1.990	.380	--	--	Maximum
.228	.166	.259	.375	.134	.235	.541	.941	.345	--	--	Minimum
10	6	8	8	10	2	2	2	2	1	1	Samples

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

ITEM NUMBER AND DESCRIPTION		TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
							METHIONINE	CYSTINE	TOTAL
LEGUMES (DRY SEED); COMMON NUTS; OTHER NUTS AND DRY SEEDS; THEIR PRODUCTS--Continued									
	LEGUME SEEDS AND THEIR PRODUCTS--Continued								
60	Pigeon peas (Cajanus cajan):								
	Average.............................grams..	0.034	0.238	0.384	0.490	0.451	0.073	0.088	0.161
	Maximum.............................do...	.071	.369	.411	.542	.625	.135	.166	--
	Minimum.............................do...	.011	.144	.357	.437	.388	.021	.024	--
	Samples.........................number..	5	5	2	2	6	6	4	--
61	Soybeans and flour (Glycine max):								
	Average.............................grams..	.086	.246	.336	.482	.395	.084	.111	.195
	Maximum.............................do...	.138	.326	.462	.551	.512	.138	.146	--
	Minimum.............................do...	.044	.169	.250	.375	.230	.042	.062	--
	Samples.........................number..	74	54	65	59	90	95	24	--
62	Soybean curd........................grams..	--	--	--	--	--	.066	.074	.140
	Samples.........................number..	--	--	--	--	--	1	1	--
63	Soybean milk:								
	Average.............................grams..	.085	.296	.294	.512	.452	.090	.120	.210
	Maximum.............................do...	.109	.331	.312	.568	.611	.108	.145	--
	Minimum.............................do...	.071	.261	.275	.456	.319	.072	.070	--
	Samples.........................number..	3	2	2	2	3	4	3	--
64	Vetch (Vicia sativa):								
	Average.............................grams..	.044	.195	.477	.497	.412	.075	.073	.148
	Maximum.............................do...	.069	.295	.542	.582	.502	.136	.103	--
	Minimum.............................do...	.017	.143	.412	.412	.325	.025	.043	--
	Samples.........................number..	4	5	2	2	5	4	2	--
	COMMON NUTS AND THEIR PRODUCTS:								
65	Almonds (Prunus amygdalus)..............grams..	.049	.170	.243	.405	.162	.072	.105	.177
	Samples.........................number..	1	1	1	1	1	1	1	--
66	Brazil nuts (Bertholletia excelsa):								
	Average.............................grams..	.071	.160	.225	.428	.168	.357	.191	.548
	Maximum.............................do...	.082	.178	.235	.434	.202	.374	--	--
	Minimum.............................do...	.060	.142	.215	.421	.133	.340	--	--
	Samples.........................number..	2	2	2	2	2	2	1	--
67	Cashews (Anacardium occidentale)........grams..	.135	.211	.350	.436	.227	.101	.151	.252
	Samples.........................number..	1	1	1	1	1	1	1	--
68	Coconut and other palm family nuts and meals: 3/								
	Average.............................grams..	.052	.201	.281	.419	.237	.110	.097	.207
	Maximum.............................do...	.066	.236	.331	.494	.354	.150	.113	--
	Minimum.............................do...	.027	.182	.232	.378	.162	.078	.081	--
	Samples.........................number..	8	7	8	8	11	12	2	--
69	Filberts (Corylus spp.):								
	Average.............................grams..	.088	.173	.356	.392	.174	.058	.069	.127
	Maximum.............................do...	.124	.185	.434	.401	.196	.075	.154	--
	Minimum.............................do...	.068	.165	.282	.385	.151	.044	.027	--
	Samples.........................number..	3	3	3	3	3	3	3	--

Peanuts and peanut products. See Legume seeds.

3/ Including coconut (Cocos nucifera), babassu (Orbignya speciosa), palm cohune (Orbignya cohune), and palm nut (Elaeis guineensis).

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
											60
0.535	0.207	0.329	0.425	0.176	0.244	0.767	1.128	0.213	0.332	0.372	Average
.568	--	.354	.476	.213	--	--	--	--	--	--	Maximum
.497	--	.312	.336	.140	--	--	--	--	--	--	Minimum
4	1	3	3	2	1	1	1	1	1	1	Samples
											61
.309	.199	.328	.452	.149	.257	.758	1.147	.261	.420	.408	Average
.344	.269	.400	.519	.168	.308	.796	1.330	.288	.462	.438	Maximum
.200	.118	.250	.330	.075	.206	.694	.965	.219	.378	.379	Minimum
57	11	58	68	57	2	3	37	4	2	2	Samples
--	--	--	--	--	--	--	--	--	--	--	62
--	--	--	--	--	--	--	--	--	--	--	Samples
											63
.328	.325	.312	.508	.203	.262	.719	.925	.288	--	.406	Average
.355	--	.355	.519	.231	--	--	--	--	--	--	Maximum
.300	--	.269	.497	.175	--	--	--	--	--	--	Minimum
2	1	2	2	2	1	1	1	1	--1	1	Samples
											64
.220	.080	.313	.488	.143	.150	.569	.589	.112	.319	.141	Average
.260	--	.438	--	.156	--	--	--	--	--	--	Maximum
.144	--	.208	--	.130	--	--	--	--	--	--	Minimum
3	1	3	1	2	1	1	1	1	1	1	Samples
.319	.172	.313	.760	.144	--	--	--	--	--	--	65
1	1	1	1	1	--	--	--	--	--	--	Samples
											66
.234	.183	.312	.852	.139	--	--	--	--	--	--	Average
.261	--	.321	.876	.142	--	--	--	--	--	--	Maximum
.206	--	.302	.827	.136	--	--	--	--	--	--	Minimum
2	1	2	2	2	--	--	--	--	--	--	Samples
.271	.204	.456	.601	.119	--	--	--	--	--	--	67
1	1	1	1	1	--	--	--	--	--	--	Samples
											68
.271	.158	.331	.757	.108	--	--	--	--	--	--	Average
.371	.250	.382	.912	.131	--	--	--	--	--	--	Maximum
.244	.118	.299	.656	.097	--	--	--	--	--	--	Minimum
9	4	8	9	9	--	--	--	--	--	--	Samples
											69
.224	.181	.390	.906	.120	--	.448	1.285	.593	.351	.604	Average
.234	--	.416	.973	.136	--	.459	1.310	.612	.358	.634	Maximum
.216	--	.370	.850	.111	--	.438	1.260	.574	.344	.574	Minimum
3	1	3	3	3	--	2	2	2	2	2	Samples

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

ITEM NUMBER AND DESCRIPTION	TRYPTO-PHAN	THREO-NINE	ISO-LEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
						METH-IONINE	CYSTINE	TOTAL
LEGUMES (DRY SEEDS); COMMON NUTS; OTHER NUTS AND DRY SEEDS; THEIR PRODUCTS--Continued								
COMMON NUTS AND THEIR PRODUCTS--Continued								
70 Pecans (Carya illinoensis):								
Average..............................grams..	0.078	0.219	0.312	0.436	0.245	0.086	0.122	0.208
Maximum..............................do...	.089	.247	.315	.509	.338	.104	.128	--
Minimum..............................do...	.068	.193	.306	.388	.173	.075	.116	--
Samples..............................number..	2	3	3	3	3	3	2	--
71 Walnuts, English or Persian (Juglans regia)..............................grams..	.062	.208	.271	.434	.156	.108	.113	.221
Samples..............................number..	1	1	1	1	1	1	1	--
OTHER NUTS AND SEEDS AND THEIR PRODUCTS:								
72 Acorns (Quercus spp.)..............................grams..	.064	.221	.286	.412	.324	.071	.094	.165
Samples..............................number..	1	1	1	1	1	1	1	--
73 Amaranth (Amaranthus paniculatus):								
Average..............................grams..	.054	.302	.320	.439	.390	.135	.189	.324
Maximum..............................do...	.056	.328	.431	.500	.512	.156	--	--
Minimum..............................do...	.051	.275	.210	.378	.269	.101	--	--
Samples..............................number..	2	2	2	2	2	3	1	--
74 Balsampear (Momordica charantia)..............................grams..	--	--	--	--	.160	--	.018	--
Samples..............................number..	--	--	--	--	1	--	--	--
75 Breadnuttree, Ramon (Brosimum alicastrum)..............................grams..	.144	.206	.300	.575	.231	.031	--	--
Samples..............................number..	1	1	1	1	1	1	--	--
76 Chinese tallow-tree nut flour (Sapium sebiferum)..............................grams..	.077	.200	.323	.400	.146	.085	.064	.149
Samples..............................number..	1	1	1	1	1	1	1	--
77 Chocolatetree, Nicaragua (Theobroma bicolor)..............................grams..	.081	.206	.288	.544	.306	.038	--	--
Samples..............................number..	1	1	1	1	1	1	--	--
78 Cottonseed flour and meal (Gossypium spp.):								
Average..............................grams..	.074	.221	.236	.369	.268	.086	.102	.188
Maximum..............................do...	.102	.271	.281	.403	.356	.131	.162	--
Minimum..............................do...	.025	.162	.203	.311	.154	.036	.041	--
Samples..............................number..	37	40	40	32	48	51	15	--
79 Earpodtree, Guanacaste (Enterolobium cyclocarpum)..............................grams..	.069	.161	.344	.712	.300	.056	--	--
Samples..............................number..	1	1	1	1	1	1	--	--
80 Leadtree (Leucaena spp.)..............................grams..	.042	.182	.363	.393	.256	.012	--	--
Samples..............................number..	1	1	1	1	1	1	--	--
81 Pumpkin seed (Cucurbita pepo):								
Average..............................grams..	.096	.160	.298	.418	.242	.099	--	--
Maximum..............................do...	.100	.175	.369	.500	.316	.129	--	--
Minimum..............................do...	.093	.146	.228	.336	.169	.069	--	--
Samples..............................number..	2	2	2	2	2	2	--	--
82 Safflower seed meal (Carthamus tinctorius):								
Average..............................grams..	.085	.184	.241	.345	.192	.092	--	--
Maximum..............................do...	.096	--	--	--	.244	.096	--	--
Minimum..............................do...	.074	--	--	--	.164	.087	--	--
Samples..............................number..	2	1	1	1	3	2	--	--

TABLE 1.—AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS—CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
											70
0.318	0.178	0.296	0.668	0.154	--	--	--	--	--	--	Average
.329	.188	.336	.716	.186	--	--	--	--	--	--	Maximum
.297	.169	.221	.639	.131	--	--	--	--	--	--	Minimum
3	2	3	3	3	--	--	--	--	--	--	Samples
.271	.206	.344	.808	.143	--	--	--	--	--	--	71
1	1	1	1	1	--	--	--	--	--	--	Samples
.241	--	.366	.368	.128	--	--	--	--	--	--	72
1	--	1	1	1	--	--	--	--	--	--	Samples
											73
.414	--	.308	.634	.150	--	--	--	--	--	--	Average
.428	--	.381	.925	.181	--	--	--	--	--	--	Maximum
.400	--	.235	.344	.139	--	--	--	--	--	--	Minimum
2	--	2	2	2	--	--	--	--	--	--	Samples
.330	.078	--	.748	.116	--	--	--	--	--	--	74
1	1	--	1	--	--	--	--	--	--	--	Samples
.250	--	.512	.488	.081	--	--	--	--	--	--	75
1	--	1	1	1	--	--	--	--	--	--	Samples
.262	.185	.415	.923	.146	0.115	0.638	1.000	0.277	0.246	0.292	76
1	1	1	1	1	1	1	1	1	1	1	Samples
.362	--	.331	.581	.094	--	--	--	--	--	--	77
1	--	1	1	1	--	--	--	--	--	--	Samples
											78
.327	.171	.308	.702	.166	.270	.645	1.143	.291	.234	.286	Average
.366	.200	.343	.825	.228	.280	.677	1.250	.331	.253	.293	Maximum
.260	.094	.232	.469	.105	.251	.620	1.060	.276	.224	.278	Minimum
39	7	40	41	41	3	3	6	4	3	3	Samples
.206	--	.244	.444	.156	--	--	--	--	--	--	79
1	--	1	1	1	--	--	--	--	--	--	Samples
.188	--	.190	.530	.124	--	--	--	--	--	--	80
1	--	1	1	1	--	--	--	--	--	--	Samples
											81
.300	--	.288	.825	.122	--	--	--	--	--	--	Average
.331	--	.312	.962	.131	--	--	--	--	--	--	Maximum
.268	--	.263	.688	.112	--	--	--	--	--	--	Minimum
2	--	2	2	2	--	--	--	--	--	--	Samples
											82
.328	--	.308	.582	.124	--	--	--	.314	--	--	Average
--	--	--	.679	--	--	--	--	--	--	--	Maximum
--	--	--	.486	--	--	--	--	--	--	--	Minimum
1	--	1	2	1	--	--	--	1	--	--	Samples

TABLE 1.—AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

ITEM NUMBER AND DESCRIPTION	TRYPTO-PHAN	THREO-NINE	ISO-LEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
						METH-IONINE	CYSTINE	TOTAL
LEGUMES (DRY SEED); COMMON NUTS; OTHER NUTS AND DRY SEEDS; THEIR PRODUCTS--Continued								
OTHER NUTS AND SEEDS AND THEIR PRODUCTS--Continued								
83 Sesame seed and seed meal (Sesamum indicum):								
Average....................grams..	0.091	0.194	0.261	0.461	0.160	0.175	0.136	0.311
Maximum....................do...	.125	.225	.300	.531	.250	.225	.211	--
Minimum....................do...	.066	.138	.222	.382	.092	.111	.081	--
Samples....................number..	8	3	2	3	7	9	4	--
84 Sunflower seed meal (Helianthus annuus):								
Average....................grams..	.079	.210	.294	.400	.200	.102	.107	.209
Maximum....................do...	.119	.250	.388	.481	.238	.137	.115	--
Minimum....................do...	.061	.169	.244	.368	.169	.081	.100	--
Samples....................number..	8	8	7	8	8	6	3	--
GRAINS AND THEIR PRODUCTS:								
85 Barley (Hordeum vulgare):								
Average....................grams..	.073	.197	.248	.405	.197	.084	.117	.201
Maximum....................do...	.099	.251	.300	.444	.220	.131	.157	--
Minimum....................do...	.050	.138	.203	.345	.138	.061	.056	--
Samples....................number..	9	29	28	28	29	30	6	--
Bread:								
86 White made with refined wheat flour and 4 percent nonfat dry milk, flour basis:								
Average....................grams..	.061	.189	.288	.448	.151	.095	.134	.229
Maximum....................do...	--	.194	.304	.468	.158	.118	.136	--
Minimum....................do...	--	.185	.271	.429	.147	.080	.132	--
Samples....................number..	1	3	3	3	3	3	2	--
87 Other breads: 4/								
Average....................grams..	.061	.185	.237	.252	.149	.148	.116	.264
Maximum....................do...	.094	.193	.286	.427	.175	.188	.138	--
Minimum....................do...	.043	.175	.188	.076	.112	.088	.104	--
Samples....................number..	9	3	2	2	3	5	8	--
88 Buckwheat flour (Fagopyrum esculentum):								
Average....................grams..	.088	.246	.235	.365	.367	.110	.122	.232
Maximum....................do...	.105	.264	.252	.389	.384	.116	.168	--
Minimum....................do...	.066	.220	.216	.327	.348	.099	.077	--
Samples....................number..	4	3	3	3	3	3	2	--
89 Cañihua (Chenopodium pallidicaule)..........grams..	.050	.300	.425	.362	.375	.112	.069	.181
Samples....................number..	1	1	1	1	1	1	1	--
Cereal combinations:								
90 Corn and soy grits....................grams..	.056	.275	.292	.575	.268	.094	.108	.202
Samples....................number..	1	1	1	1	1	1	1	--
91 Infant food, precooked mixed cereals with nonfat dry milk and yeast..............grams..	.036	--	--	--	.088	.100	.044	.144
Samples....................number..	1	--	--	--	1	1	1	--
92 Oat-corn-rye mixture, puffed..............grams..	.069	.219	.338	.550	.138	.156	.094	.250
Samples....................number..	1	1	1	1	1	1	1	--

4/ Based on miscellaneous samples including other white bread, hard bread with and without oatmeal, and pumpernickel.

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
											83
0.400	0.261	0.244	0.547	0.121	0.219	--	--	0.581	--	--	Average
.519	.294	.319	.628	.148	--	--	--	--	--	--	Maximum
.280	.219	.112	.469	.094	--	--	--	--	--	--	Minimum
3	3	3	3	2	1	--	--	1	--	--	Samples
											84
.281	.149	.312	.546	.135	.200	--	--	--	--	--	Average
.356	.162	.350	.706	.185	--	--	--	--	--	--	Maximum
.200	.136	.275	.369	.106	--	--	--	--	--	--	Minimum
8	2	8	8	7	1	--	--	--	--	--	Samples
											85
.301	.212	.293	.300	.109	.268	0.324	1.303	.265	0.526	0.271	Average
.356	.275	.326	.356	.150	.281	.400	1.440	.372	.638	.400	Maximum
.241	.175	.238	.172	.085	.256	.156	1.100	.181	.300	.172	Minimum
29	7	29	29	29	3	4	5	5	4	5	Samples
											86
.312	.163	.292	.228	.129	.180	.286	1.980	.202	.675	--	Average
.328	.211	.292	.236	.135	--	--	--	--	--	--	Maximum
.300	.137	.291	.221	.119	--	--	--	--	--	--	Minimum
3	3	3	3	3	1	1	1	1	1	--	Samples
											87
.322	.226	.238	.236	.129	--	--	--	--	--	--	Average
.344	.306	.288	.257	.144	--	--	--	--	--	--	Maximum
.300	.156	.188	.219	.112	--	--	--	--	--	--	Minimum
4	8	2	3	3	--	--	--	--	--	--	Samples
											88
.236	.128	.324	.497	.137	--	--	--	--	--	--	Average
.263	.129	.347	.596	.143	--	--	--	--	--	--	Maximum
.209	.126	.295	.356	.132	--	--	--	--	--	--	Minimum
3	2	3	4	3	--	--	--	--	--	--	Samples
.225	.125	.288	.494	.156	--	--	--	--	--	--	89
1	1	1	1	1	--	--	--	--	--	--	Samples
.289	.195	.366	.341	.164	--	--	--	--	--	--	90
1	1	1	1	1	--	--	--	--	--	--	Samples
.175	.144	--	.144	.075	--	--	--	--	--	--	91
1	1	--	1	1	--	--	--	--	--	--	Samples
.375	.250	.362	.312	.131	--	--	--	--	--	--	92
1	1	1	1	1	--	--	--	--	--	--	Samples

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

ITEM NUMBER AND DESCRIPTION	TRYPTO-PHAN	THREO-NINE	ISO-LEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
						METH-IONINE	CYSTINE	TOTAL
GRAINS AND THEIR PRODUCTS--Continued								
93 Corn, cornmeal, grits (Zea mays):								
Average....................grams..	0.038	0.249	0.289	0.810	0.180	0.116	0.081	0.197
Maximum....................do...	.074	.316	.400	1.344	.322	.248	.190	--
Minimum....................do...	.008	.194	.221	.582	.028	.059	.050	--
Samples....................number..	267	25	22	25	98	96	145	--
Corn products:								
94 Flakes:								
Average....................grams..	.040	.212	.236	.808	.119	.104	.117	.221
Maximum....................do...	.061	.231	.248	.832	.275	.138	--	--
Minimum....................do...	.018	.198	.225	.784	.027	.047	--	--
Samples....................number..	2	3	2	2	3	3	1	--
95 Germ:								
Average....................grams..	.062	.268	.249	.444	.341	.100	.056	.156
Maximum....................do...	.064	.281	.262	.481	.367	.106	--	--
Minimum....................do...	.061	.248	.238	.422	.325	.094	--	--
Samples....................number..	2	4	4	4	3	2	1	--
96 Gluten:								
Average....................grams..	.037	.215	.277	.977	.112	.176	.088	.264
Maximum....................do...	.054	.256	.321	1.544	.199	.312	.094	--
Minimum....................do...	.025	.169	.125	.580	.069	.079	.075	--
Samples....................number..	7	8	6	6	6	6	3	--
97 Hominy:								
Average....................grams..	.060	.227	.251	.582	.257	.071	--	--
Maximum....................do...	.071	.254	.273	.692	.272	.118	--	--
Minimum....................do...	.048	.198	.225	.519	.241	.042	--	--
Samples....................number..	3	3	3	3	3	3	--	--
98 Masa:								
Average....................grams..	.022	--	--	--	.230	.242	.066	.308
Maximum....................do...	.022	--	--	--	.244	.283	.067	--
Minimum....................do...	.022	--	--	--	.217	.200	.065	--
Samples....................number..	2	--	--	--	2	2	2	--
99 Pozol....................grams..	.044	.356	.322	.626	.248	.092	--	--
Samples....................number..	1	1	1	1	1	1	--	--
100 Tortilla:								
Average....................grams..	.033	.253	.372	1.012	.155	.120	--	--
Maximum....................do...	.041	.287	--	1.181	.174	.134	--	--
Minimum....................do...	.025	.219	--	.843	.137	.106	--	--
Samples....................number..	2	2	1	2	2	2	--	--
101 Zein:								
Average....................grams..	.004	.192	.319	1.236	.000	.109	.063	.172
Maximum....................do...	.006	.206	--	--	--	.126	.088	--
Minimum....................do...	.002	.179	--	--	--	.094	.038	--
Samples....................number..	4	2	1	1	5	6	2	--
102 Job's tears (Coix lacryma-jobi)..........grams..	.028	.262	.450	1.481	.153	.194	.112	.306
Samples....................number..	1	1	1	1	1	1	1	--

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
											93
0.284	0.382	0.319	0.220	0.129	0.622	0.776	1.103	0.212	0.522	0.353	Average
.333	.459	.467	.377	.200	.661	.803	1.400	.259	.601	.533	Maximum
.202	.132	.268	.131	.090	.582	.749	.943	.180	.443	.246	Minimum
17	118	23	124	121	2	2	3	3	2	3	Samples
											94
.273	.218	.298	.178	.174	--	--	--	--	--	--	Average
.338	.309	.316	.296	.200	--	--	--	--	--	--	Maximum
.234	.126	.279	.108	.153	--	--	--	--	--	--	Minimum
3	2	2	3	3	--	--	--	--	--	--	Samples
											95
.208	.148	.340	.489	.200	--	--	--	--	--	--	Average
.241	--	.369	.631	.225	--	--	--	--	--	--	Maximum
.177	--	.321	.350	.186	--	--	--	--	--	--	Minimum
3	1	3	3	3	--	--	--	--	--	--	Samples
											96
.349	.364	.320	.201	.125	--	.121	1.555	.252	--	--	Average
.417	.444	.356	.220	.148	--	--	1.610	.269	--	--	Maximum
.254	.231	.282	.188	.106	--	--	1.530	.234	--	--	Minimum
5	6	6	6	6	--	1	4	2	--	--	Samples
											97
.239	.238	.286	.319	.146	--	--	--	--	--	--	Average
.284	.251	.355	.361	.172	--	--	--	--	--	--	Maximum
.209	.225	.246	.262	.123	--	--	--	--	--	--	Minimum
3	2	3	3	3	--	--	--	--	--	--	Samples
											98
--	--	--	--	--	--	--	--	--	--	--	Average
--	--	--	--	--	--	--	--	--	--	--	Maximum
--	--	--	--	--	--	--	--	--	--	--	Minimum
--	--	--	--	--	--	--	--	--	--	--	Samples
.269	--	.283	.209	.129	--	--	--	--	--	--	99
1	--	1	1	1	--	--	--	--	--	--	Samples
											100
.272	--	.328	.240	.138	--	--	--	--	--	--	Average
.275	--	.338	.275	.144	--	--	--	--	--	--	Maximum
.269	--	.318	.206	.133	--	--	--	--	--	--	Minimum
2	--	2	2	2	--	--	--	--	--	--	Samples
											101
.646	.381	.254	.111	.084	.687	.312	1.854	.088	.656	.402	Average
.850	.412	.258	.126	.096	.769	.338	2.250	--	.662	.435	Maximum
.441	.350	.250	.101	.077	.644	.285	1.516	--	.649	.369	Minimum
2	2	2	4	4	3	2	4	1	2	2	Samples
.297	--	--	.219	.134	--	--	--	--	--	--	102
1	--	--	1	1	--	--	--	--	--	--	Samples

TABLE 1--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

ITEM NUMBER AND DESCRIPTION	TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
						METHIONINE	CYSTINE	TOTAL
GRAINS AND THEIR PRODUCTS--Continued								
Millets:								
103 Foxtail millet (Setaria italica)........grams..	0.062	0.194	0.475	1.044	0.131	0.175	--	--
Samples........................number..	1	1	1	1	1	1	--	--
104 Little millet (Panicum miliare).........grams..	.038	.212	.419	.681	.112	.144	--	--
Samples........................number..	1	1	1	1	1	1	--	--
105 Pearlmillet (Pennisetum glaucum):								
Average..........................grams..	.127	.233	.325	.893	.196	.138	0.078	0.216
Maximum..........................do...	.153	.344	.441	1.150	.264	.175	.084	--
Minimum..........................do...	.100	.150	.188	.583	.153	.100	.072	--
Samples........................number..	7	6	8	8	8	8	4	--
106 Ragimillet (Eleusine coracana):								
Average..........................grams..	.080	.254	.374	.583	.190	.254	.176	.430
Maximum..........................do...	.103	.260	.419	.654	.236	.368	.202	--
Minimum..........................do...	.043	.248	.290	.534	.106	.162	.151	--
Samples........................number..	6	2	4	4	6	9	2	--
107 Oats, oatmeal, rolled oats (Avena sativa):								
Average..........................grams..	.075	.193	.301	.437	.214	.086	.127	.213
Maximum..........................do...	.097	.225	.369	.556	.320	.144	.188	--
Minimum..........................do...	.037	.131	.259	.331	.119	.065	.083	--
Samples........................number..	46	27	24	52	55	53	10	--
108 Quinoa (Chenopodium quinoa):								
Average..........................grams..	.068	.297	.410	.444	.414	.158	.061	.219
Maximum..........................do...	.082	.337	.437	--	.460	.202	--	--
Minimum..........................do...	.052	.272	.350	--	.369	.123	--	--
Samples........................number..	6	6	6	6	6	6	6	--
Rice (Oryza sativa):								
109 Brown, converted, white:								
Average..........................grams..	.064	.233	.279	.513	.235	.107	.081	.188
Maximum..........................do...	.096	.457	.421	.692	.333	.230	.154	--
Minimum..........................do...	.022	.138	.192	.369	.076	.034	.050	--
Samples........................number..	49	67	55	59	82	62	33	--
110 Germ..................................grams..	.113	.912	.264	.351	.715	.176	.071	.247
Samples........................number..	1	1	1	1	1	1	1	--
111 Puffed rice:								
Average..........................grams..	.046	--	--	--	.056	--	.044	--
Maximum..........................do...	.062	--	--	--	--	--	--	--
Minimum..........................do...	.031	--	--	--	--	--	--	--
Samples........................number..	2	--	--	--	1	--	1	--
112 Rye (Secale cereale), whole grain, and flours of different extractions:								
Average..........................grams..	.066	.216	.248	.392	.238	.092	.116	.208
Maximum..........................do...	.125	.262	.275	.443	.262	.138	.176	--
Minimum..........................do...	.034	.138	.219	.345	.207	.034	.037	--
Samples........................number..	9	7	7	7	7	8	6	--
113 Sorghum (Sorghum vulgare):								
Average..........................grams..	.070	.224	.340	1.004	.170	.108	.104	.212
Maximum..........................do...	.084	.312	.437	1.644	.244	.194	.147	--
Minimum..........................do...	.053	.158	.256	.575	.094	.029	.077	--
Samples........................number..	15	12	17	17	17	17	6	--

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
0.419	--	0.431	0.225	0.131	--	--	--	--	--	--	103
1	--	1	1	1	--	--	--	--	--	--	Samples
.300	--	.381	.294	.119	--	--	--	--	--	--	104
1	--	1	1	1	--	--	--	--	--	--	Samples
											105
.259	--	.349	.268	.123	--	--	--	--	--	--	Average
.316	--	.399	.328	.147	--	--	--	--	--	--	Maximum
.216	--	.250	.219	.100	--	--	--	--	--	--	Minimum
8	--	8	5	7	--	--	--	--	--	--	Samples
											106
.247	--	.445	.094	.074	--	--	--	--	--	--	Average
.325	--	.527	--	.094	--	--	--	--	--	--	Maximum
.098	--	.361	--	.020	--	--	--	--	--	--	Minimum
5	--	4	1	4	--	--	--	--	--	--	Samples
											107
.311	.215	.347	.384	.107	0.356	0.241	1.174	0.265	0.332	0.233	Average
.450	.281	.438	.469	.148	.444	.281	1.280	.326	.406	.306	Maximum
.261	.094	.238	.259	.076	.256	.188	1.070	.194	.256	.148	Minimum
25	12	24	28	26	4	4	5	5	4	5	Samples
											108
.224	.144	.254	.466	.169	--	--	--	--	--	--	Average
.257	--	.308	.580	.215	--	--	--	--	--	--	Maximum
.186	--	.190	.420	.145	--	--	--	--	--	--	Minimum
6	1	6	6	6	--	--	--	--	--	--	Samples
											109
.299	.272	.416	.343	.100	--	.281	.815	.407	.288	.302	Average
.419	.365	.558	.714	.219	--	.289	1.510	.440	.314	.345	Maximum
.234	.165	.294	.145	.037	--	.259	.649	.362	.255	.271	Minimum
56	10	56	39	44	--	5	6	5	5	5	Samples
.314	.389	.393	.653	.180	--	.548	.523	.431	.364	.389	110
1	1	1	1	1	--	1	1	1	1	1	Samples
											111
.288	.125	--	.138	.138	--	--	--	--	--	--	Average
--	.131	--	--	--	--	--	--	--	--	--	Maximum
--	.119	--	--	--	--	--	--	--	--	--	Minimum
1	2	--	1	1	--	--	--	--	--	--	Samples
											112
.275	.188	.304	.285	.133	--	--	1.240	--	--	.241	Average
.350	.300	.337	.358	.142	--	--	--	--	--	--	Maximum
.240	.081	.241	.207	.108	--	--	--	--	--	--	Minimum
7	6	7	7	7	--	--	1	--	--	1	Samples
											113
.311	.172	.357	.237	.120	--	--	1.370	--	--	.316	Average
.401	.260	.504	.278	.158	--	--	--	--	--	--	Maximum
.244	.105	.275	.200	.088	--	--	--	--	--	--	Minimum
17	3	17	10	16	--	--	1	--	--	1	Samples

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

ITEM NUMBER AND DESCRIPTION	TRYPTO-PHAN	THREO-NINE	ISO-LEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
						METH-IONINE	CYSTINE	TOTAL
GRAINS AND THEIR PRODUCTS--Continued								
114 Teosinte (Euchlaena mexicana):								
Average......grams..	0.014	--	--	--	0.099	0.141	--	--
Maximum......do...	.016	--	--	--	.125	.158	--	--
Minimum......do...	.009	--	--	--	.074	.114	--	--
Samples......number..	4	--	--	--	4	4	--	--
Wheat (Triticum aestivum):								
115 Whole grain and whole grain flour:								
Average......grams..	.072	0.168	0.253	0.391	.160	.089	0.128	0.217
Maximum......do...	.085	.206	.298	.426	.215	.175	.169	--
Minimum......do...	.052	.106	.189	.346	.134	.042	.053	--
Samples......number..	19	63	57	57	83	85	36	--
116 Flour of intermediate extraction......grams..	--	.186	.294	.439	.169	.094	.152	.246
Samples......number..	--	1	1	1	1	1	1	--
117 White flour:								
Average......grams..	.070	.164	.262	.439	.130	.075	.114	.189
Maximum......do...	.088	.184	.292	.469	.156	.107	.147	--
Minimum......do...	.039	.131	.231	.416	.077	.044	.088	--
Samples......number..	10	6	3	3	8	7	4	--
Wheat products:								
118 Bran:								
Average......grams..	.103	.180	.255	.377	.258	.076	.142	.218
Maximum......do...	.137	.216	.337	.491	.331	.097	.174	--
Minimum......do...	.062	.133	.212	.325	.200	.039	.114	--
Samples......number..	5	6	6	6	7	6	3	--
119 Burghul......grams..	.033	--	--	--	.202	.141	.150	.291
Samples......number..	1	--	--	--	1	1	1	--
120 Farina:								
Average......grams..	.065	--	--	--	.104	.075	.096	.171
Maximum......do...	.088	--	--	--	.125	--	.106	--
Minimum......do...	.050	--	--	--	.081	--	.088	--
Samples......number..	4	--	--	--	4	1	3	--
121 Flaked wheat:								
Average......grams..	.064	.188	.262	.470	.190	.067	.101	.168
Maximum......do...	.076	.214	.312	.569	.253	.076	--	--
Minimum......do...	.051	.162	.192	.390	.126	.057	--	--
Samples......number..	2	2	4	4	2	2	1	--
122 Germ:								
Average......grams..	.061	.309	.271	.393	.353	.093	.066	.159
Maximum......do...	.078	.460	.384	.535	.418	.125	.100	--
Minimum......do...	.046	.212	.224	.327	.269	.062	.038	--
Samples......number..	5	5	5	6	8	6	3	--
123 Gluten:								
Average......grams..	.061	.151	.262	.427	.109	.099	.123	.222
Maximum......do...	.081	.175	.297	.456	.131	.120	.169	--
Minimum......do...	.034	.131	.225	.350	.088	.076	.097	--
Samples......number..	33	23	23	23	29	31	28	--
124 Macaroni or spaghetti:								
Average......grams..	.067	.222	.286	.378	.184	.086	.108	.194
Maximum......do...	.081	--	--	--	--	--	--	--
Minimum......do...	.053	--	--	--	--	--	--	--
Samples......number..	2	1	1	1	1	1	1	--

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
											114
--	--	--	--	--	--	--	--	--	--	--	Average
--	--	--	--	--	--	--	--	--	--	--	Maximum
--	--	--	--	--	--	--	--	--	--	--	Minimum
--	--	--	--	--	--	--	--	--	--	--	Samples
											115
0.288	0.218	0.270	0.279	0.119	0.204	0.318	1.822	0.356	0.609	0.269	Average
.356	.300	.300	.344	.162	--	--	1.930	.471	--	--	Maximum
.232	.164	.224	.173	.081	--	--	1.500	.242	--	--	Minimum
59	8	62	69	64	1	1	25	2	1	1	Samples
.348	.159	.277	.261	.136	--	--	--	--	--	--	116
1	1	1	1	1	--	--	--	--	--	--	Samples
											117
.313	.195	.246	.253	.114	.172	.247	1.983	.207	.681	.294	Average
.350	.250	.279	.459	.154	--	.252	2.110	.212	.706	.294	Maximum
.280	.108	.161	.194	.081	--	.238	1.830	.196	.644	.294	Minimum
6	7	6	8	7	1	3	3	3	3	2	Samples
											118
.228	.136	.290	.390	.147	--	--	--	--	--	.333	Average
.280	.182	.319	.451	.170	--	--	--	--	--	--	Maximum
.196	.067	.242	.300	.125	--	--	--	--	--	--	Minimum
6	4	6	6	5	--	--	--	--	--	1	Samples
--	--	--	--	--	-	--	--	--	--	--	119
--	--	--	--	--	-	--	--	--	--	--	Samples
											120
.303	.234	--	.222	.140	--	--	--	--	--	--	Average
.350	.281	--	.325	.194	--	--	--	--	--	--	Maximum
.256	.212	--	.169	.100	--	--	--	--	--	--	Minimum
4	6	--	4	4	--	--	--	--	--	--	Samples
											121
.252	.164	.302	.295	.122	--	--	--	--	--	--	Average
.271	.215	.321	.332	.124	--	--	--	--	--	--	Maximum
.234	.113	.281	.258	.119	--	--	--	--	--	--	Minimum
2	2	4	2	2	--	--	--	--	--	--	Samples
											122
.209	.203	.314	.420	.158	--	--	--	--	--	--	Average
.262	.238	.394	.600	.268	--	--	--	--	--	--	Maximum
.156	.163	.275	.338	.128	--	--	--	--	--	--	Minimum
7	3	5	7	7	--	--	--	--	--	--	Samples
											123
.310	.185	.270	.248	.130	.128	.206	.209	.209	.726	.270	Average
.346	.322	.334	.296	.137	.169	.236	.241	.450	.883	.285	Maximum
.275	.134	.219	.111	.119	.106	.137	.179	.175	.667	.251	Minimum
23	24	23	27	23	8	24	27	21	17	6	Samples
											124
.298	.188	.324	.259	.135	--	--	--	--	--	--	Average
--	.219	--	--	--	--	--	--	--	--	--	Maximum
--	.157	--	--	--	--	--	--	--	--	--	Minimum
1	2	1	1	1	--	--	--	--	--	--	Samples

TABLE 1.—AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

ITEM NUMBER AND DESCRIPTION	TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
						METHIONINE	CYSTINE	TOTAL
GRAINS AND THEIR PRODUCTS--Continued								
Wheat (Triticum aestivum)--Continued								
Wheat products--Continued								
125 Noodles (contain egg solids)...........grams..	0.060	0.241	0.281	0.377	0.186	0.096	0.111	0.207
Samples.........................number..	1	1	1	1	1	1	1	--
126 Shredded wheat.........................grams..	.049	.234	.259	.395	.191	.080	.118	.198
Samples.........................number..	1	1	1	1	1	1	1	--
127 Whole wheat with added wheat germ:								
Average.........................grams..	.062	--	--	--	.212	--	.112	--
Maximum.........................do...	.075	--	--	--	--	--	--	--
Minimum.........................do...	.050	--	--	--	--	--	--	--
Samples.........................number..	2	--	--	--	1	--	1	--
FRUITS:								
128 Abiu (Pouteria campechiana)...............grams..	.104	--	--	--	.311	.048	--	--
Samples.........................number..	1	--	--	--	1	1	--	--
129 Avocados (Persea americana):								
Average.........................grams..	.068	--	--	--	.357	.058	--	--
Maximum.........................do...	.088	--	--	--	.400	.067	--	--
Minimum.........................do...	.046	--	--	--	.242	.046	--	--
Samples.........................number..	9	--	--	--	9	9	--	--
Bananas, ripe:								
130 Common (Musa paradisiaca var. sapientum):								
Average.........................grams..	.095	--	--	--	.289	.055	--	--
Maximum.........................do...	.115	--	--	--	.319	.077	--	--
Minimum.........................do...	.076	--	--	--	.241	.035	--	--
Samples.........................number..	4	--	--	--	4	4	--	--
131 Dwarf (Musa nana).........................grams..	.063	--	--	--	.253	.023	--	--
Samples.........................number..	1	--	--	--	1	1	--	--
132 Dates (Phoenix dactylifera)...............grams..	.173	.173	.211	.219	.184	.076	--	--
Samples.........................number..	1	1	1	1	1	1	--	--
133 Grapefruit, juice and pulp (Citrus paradisi)...........grams..	.012	--	--	--	.075	.000	--	--
Samples.........................number..	1	--	--	--	1	1	--	--
134 Guavas, common (Psidium guajava):								
Average.........................grams..	.060	--	--	--	.188	.060	--	--
Maximum.........................do...	.094	--	--	--	.244	.078	--	--
Minimum.........................do...	.026	--	--	--	.132	.042	--	--
Samples.........................number..	2	--	--	--	2	2	--	--
135 Limes (Citrus spp.).......................grams..	.025	--	--	--	.117	.017	--	--
Samples.........................number..	1	--	--	--	1	1	--	--
136 Mamey (Mammea americana)...................grams..	.071	--	--	--	.500	.086	--	--
Samples.........................number..	1	--	--	--	1	1	--	--
137 Mangos (Mangifera indica):								
Average.........................grams..	.125	--	--	--	.831	.071	--	--
Maximum.........................do...	.225	--	--	--	1.550	.100	--	--
Minimum.........................do...	.062	--	--	--	.525	.050	--	--
Samples.........................number..	5	--	--	--	5	5	--	--
138 Muskmelons (Cucumis melo).................grams..	.011	--	--	--	.156	.022	--	--
Samples.........................number..	1	--	--	--	1	1	--	--

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
0.276	0.141	0.337	0.281	0.136	--	--	--	--	--	--	125
1	1	1	1	1	--	--	--	--	--	--	Samples
.278	.136	.333	.302	.136	--	--	--	--	--	--	126
1	1	1	1	1	--	--	--	--	--	--	Samples
											127
.344	.219	--	.338	.169	--	--	--	--	--	--	Average
--	.219	--	--	--	--	--	--	--	--	--	Maximum
--	.219	--	--	--	--	--	--	--	--	--	Minimum
1	2	--	1	1	--	--	--	--	--	--	Samples
--	--	--	--	--	--	--	--	--	--	--	128
--	--	--	--	--	--	--	--	--	--	--	Samples
											129
--	--	--	--	--	--	--	--	--	--	--	Average
--	--	--	--	--	--	--	--	--	--	--	Maximum
--	--	--	--	--	--	--	--	--	--	--	Minimum
--	--	--	--	--	--	--	--	--	--	--	Samples
											130
--	.162	--	--	--	--	--	--	--	--	--	Average
--	--	--	--	--	--	--	--	--	--	--	Maximum
--	--	--	--	--	--	--	--	--	--	--	Minimum
--	1	--	--	--	--	--	--	--	--	--	Samples
--	--	--	--	--	--	--	--	--	--	--	131
--	--	--	--	--	--	--	--	--	--	--	Samples
.180	--	.267	.139	.139	--	--	--	--	--	--	132
1	--	1	1	1	--	--	--	--	--	--	Samples
--	--	--	--	--	--	--	--	--	--	--	133
--	--	--	--	--	--	--	--	--	--	--	Samples
											134
--	--	--	--	--	--	--	--	--	--	--	Average
--	--	--	--	--	--	--	--	--	--	--	Maximum
--	--	--	--	--	--	--	--	--	--	--	Minimum
--	--	--	--	--	--	--	--	--	--	--	Samples
--	--	--	--	--	--	--	--	--	--	--	135
--	--	--	--	--	--	--	--	--	--	--	Samples
--	--	--	--	--	--	--	--	--	--	--	136
--	--	--	--	--	--	--	--	--	--	--	Samples
											137
--	--	--	--	--	--	--	--	--	--	--	Average
--	--	--	--	--	--	--	--	--	--	--	Maximum
--	--	--	--	--	--	--	--	--	--	--	Minimum
--	--	--	--	--	--	--	--	--	--	--	Samples
--	--	--	--	--	--	--	--	--	--	--	138
--	--	--	--	--	--	--	--	--	--	--	Samples

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

ITEM NUMBER AND DESCRIPTION	TRYPTO-PHAN	THREO-NINE	ISO-LEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
						METH-IONINE	CYSTINE	TOTAL
FRUITS--Continued								
139 Oranges, juice only (Citrus sinensis):								
Average........grams..	0.021	--	--	--	0.165	0.018	--	--
Maximum........do...	.042	--	--	--	.211	.029	--	--
Minimum........do...	.008	--	--	--	.115	.008	--	--
Samples........number..	4	--	--	--	4	4	--	--
140 Oranges, mandarin, segments (Citrus reticulata):								
Average........grams..	.039	--	--	--	.221	.033	--	--
Maximum........do...	.064	--	--	--	.245	.045	--	--
Minimum........do...	.027	--	--	--	.191	.025	--	--
Samples........number..	3	--	--	--	3	3	--	--
141 Papayas (Carica papaya)........grams..	.125	--	--	--	.400	.025	--	--
Samples........number..	1	--	--	--	1	1	--	--
142 Pineapple (Ananas comosus)........grams..	.078	--	--	--	.144	.022	--	--
Samples........number..	1	--	--	--	1	1	--	--
143 Plantain, green and ripe (Musa paradisiaca):								
Average........grams..	.055	0.152	0.319	0.338	.282	.030	0.091	0.121
Maximum........do...	.086	.169	--	--	.429	.050	--	--
Minimum........do...	.039	.136	--	--	.154	.012	--	--
Samples........number..	5	2	1	1	5	6	1	--
144 Soursop (Annona muricata)........grams..	.069	--	--	--	.375	.044	--	--
Samples........number..	1	--	--	--	1	1	--	--
145 Sugarapple (Annona squamosa)........grams..	.032	--	--	--	.246	.029	--	--
Samples........number..	1	--	--	--	1	1	--	--
VEGETABLES:								
IMMATURE SEEDS:								
146 Corn (Zea mays):								
Average........grams..	.039	.255	.232	.687	.231	.122	.104	.226
Maximum........do...	.053	.288	.275	.743	.262	.165	--	--
Minimum........do...	.031	.231	.172	.638	.195	.088	--	--
Samples........number..	7	5	5	5	7	7	1	--
147 Cowpeas (Vigna spp.):								
Average........grams..	.066	.235	.309	.434	.410	.087	--	--
Maximum........do...	.077	.256	.363	.482	.432	.092	--	--
Minimum........do...	.054	.226	.282	.369	.371	.078	--	--
Samples........number..	4	4	4	4	4	4	--	--
148 Lima beans, large- and small-seeded varieties (Phaseolus lunatus including var. macrocarpus):								
Average........grams..	.081	.282	.383	.504	.395	.067	.069	.136
Maximum........do...	.098	.324	.417	.541	.431	.082	--	--
Minimum........do...	.069	.247	.324	.473	.358	.057	--	--
Samples........number..	5	4	4	4	5	5	1	--
149 Peas, raw or canned (Pisum sativum):								
Average........grams..	.052	.229	.287	.390	.295	.050	.068	.118
Maximum........do...	.077	.298	.361	.546	.436	.093	.096	--
Minimum........do...	.025	.173	.230	.293	.089	.017	.039	--
Samples........number..	10	10	7	9	10	10	2	--

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
											139
--	--	--	--	--	--	--	--	--	--	--	Average
--	--	--	--	--	--	--	--	--	--	--	Maximum
--	--	--	--	--	--	--	--	--	--	--	Minimum
--	--	--	--	--	--	--	--	--	--	--	Samples
											140
--	--	--	--	--	--	--	--	--	--	--	Average
--	--	--	--	--	--	--	--	--	--	--	Maximum
--	--	--	--	--	--	--	--	--	--	--	Minimum
--	--	--	--	--	--	--	--	--	--	--	Samples
--	--	--	--	--	--	--	--	--	--	--	141
--	--	--	--	--	--	--	--	--	--	--	Samples
--	--	--	--	--	--	--	--	--	--	--	142
--	--	--	--	--	--	--	--	--	--	--	Samples
											143
0.281	--	0.371	0.256	--	--	0.682	1.091	--	--	--	Average
--	--	.473	--	--	--	--	--	--	--	--	Maximum
--	--	.269	--	--	--	--	--	--	--	--	Minimum
1	--	2	1	--	--	1	1	--	--	--	Samples
--	--	--	--	--	--	--	--	--	--	--	144
--	--	--	--	--	--	--	--	--	--	--	Samples
--	--	--	--	--	--	--	--	--	--	--	145
--	--	--	--	--	--	--	--	--	--	--	Samples
											146
.350	0.209	.390	.294	0.161	--	--	--	--	--	--	Average
.469	--	.450	.388	.169	--	--	--	--	--	--	Maximum
.266	--	.347	.250	.150	--	--	--	--	--	--	Minimum
5	1	5	5	5	--	--	--	--	--	--	Samples
											147
.348	--	.341	.409	.206	--	--	--	--	--	--	Average
.359	--	.402	.494	.214	--	--	--	--	--	--	Maximum
.340	--	.310	.358	.199	--	--	--	--	--	--	Minimum
4	--	4	4	4	--	--	--	--	--	--	Samples
											148
.324	.216	.404	.378	.206	--	--	--	--	--	--	Average
.351	--	.421	.434	.216	--	--	--	--	--	--	Maximum
.286	--	.385	.274	.189	--	--	--	--	--	--	Minimum
4	1	4	4	4	--	--	--	--	--	--	Samples
											149
.240	.152	.256	.555	.102	0.183	.596	.442	0.202	--	--	Average
.313	.258	.328	.761	.198	--	--	--	--	--	--	Maximum
.151	.100	.194	.426	.061	--	--	--	--	--	--	Minimum
10	4	9	8	9	1	1	1	1	--	--	Samples

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

ITEM NUMBER AND DESCRIPTION		TRYPTO-PHAN	THREO-NINE	ISO-LEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
							METH-IONINE	CYSTINE	TOTAL
	VEGETABLES--Continued								
	LEAFY VEGETABLES:								
150	Amaranth (Amaranthus gangeticus):								
	Average....grams..	0.068	0.100	0.293	0.368	0.251	0.044	0.042	0.086
	Maximum....do...	--	.138	--	--	--	.066	--	--
	Minimum....do...	--	.062	--	--	--	.023	--	--
	Samples....number..	1	2	1	1	1	2	1	--
151	Beet greens (Beta vulgaris):								
	Average....grams..	.075	.239	.263	.404	.338	.106	--	--
	Maximum....do....	.075	.240	.264	.409	.338	.106	--	--
	Minimum....do....	.075	.238	.262	.400	.337	.106	--	--
	Samples....number..	2	2	2	2	2	2	--	--
152	Brussels sprouts (Brassica oleracea var. gemmifera):								
	Average....grams..	.063	.218	.264	.276	.280	.066	--	--
	Maximum....do...	.076	.236	.286	.278	.288	.070	--	--
	Minimum....do...	.050	.199	.242	.274	.272	.062	--	--
	Samples....number..	2	2	2	2	2	2	--	--
153	Cabbage (Brassica oleracea var. capitata):								
	Average....grams..	.050	.175	.180	.255	.295	.058	.125	.183
	Maximum....do...	.052	.188	.196	.279	.438	.084	.150	--
	Minimum....do...	.048	.163	.163	.231	.205	.032	.100	--
	Samples....number..	2	3	2	2	3	2	2	--
154	Chard (Beta vulgaris var. cicla):								
	Average....grams..	.064	.[illegible]58	.267	.340	.246	.019	--	--
	Maximum....do...	.068	--	--	--	.316	.038	--	--
	Minimum....do...	.059	--	--	--	.177	.000	--	--
	Samples....number..	2	1	1	1	2	2	--	--
155	Chicory (Cichorium intybus)....grams..	.094	--	--	--	.202	.061	.024	.085
	Samples....number..	1	--	--	--	1	1	1	--
156	Collards (Brassica oleracea var. acephala):								
	Average....grams..	.088	.183	.194	.350	.324	.073	.094	.167
	Maximum....do...	.104	.275	.302	.465	.354	.077	--	--
	Minimum....do...	.072	.091	.087	.234	.294	.069	--	--
	Samples....number..	2	2	2	2	2	2	1	--
157	Kale (Brassica oleracea var. acephala):								
	Average....grams..	.068	.222	.213	.404	.194	.056	.058	.114
	Maximum....do...	.069	.226	.214	.406	.194	.056	--	--
	Minimum....do...	[illegible]	.219	.212	.402	.193	.055	--	--
	Samples....number..	2	2	2	2	2	2	1	--
158	Lettuce (Lactuca sativa)....grams..	.061	--	--	--	.367	.022	--	--
	Samples....number..	1	--	--	--	1	1	--	--
159	Mustard greens (Brassica spp.)....grams..	.100	.164	.205	.168	.302	.064	.094	.158
	Samples....number..	1	1	1	1	1	1	1	--
160	Parsley, curled garden (Petroselinum crispum)....grams..	.125	--	--	--	.400	.030	--	--
	Samples....number..	1	--	--	--	1	1	--	--
161	Spinach (Spinacia oleracea):								
	Average....grams..	.101	.276	.290	.478	.386	.106	.124	.230
	Maximum....do...	.140	.414	.400	.598	.560	.144	--	--
	Minimum....do...	.068	.148	.152	.271	.192	.041	--	--
	Samples....number..	8	9	8	8	9	8	1	--

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
											150
0.172	0.188	0.242	0.239	0.124	0.500	0.450	0.575	--	--	--	Average
--	--	.284	--	--	--	--	--	--	--	--	Maximum
--	--	.200	--	--	--	--	--	--	--	--	Minimum
1	1	2	1	1	1	1	1	--	--	--	Samples
											151
.362	--	.316	.260	.082	--	--	--	--	--	--	Average
.362	--	.319	.264	.082	--	--	--	--	--	--	Maximum
.361	--	.312	.256	.081	--	--	--	--	--	--	Minimum
2	--	2	2	2	--	--	--	--	--	--	Samples
											152
.210	--	.274	.396	.150	--	--	--	--	--	--	Average
.243	--	.286	.405	.151	--	--	--	--	--	--	Maximum
.176	--	.263	.388	.148	--	--	--	--	--	--	Minimum
2	--	2	2	2	--	--	--	--	--	--	Samples
											153
.136	.132	.193	.470	.112	.316	.875	1.188	--	--	0.188	Average
.200	--	.248	.484	.129	.444	--	--	--	--	--	Maximum
.102	--	.156	.455	.094	.188	--	--	--	--	--	Minimum
4	1	3	2	4	2	1	1	--	--	1	Samples
											154
.205	--	.246	.158	.080	--	--	--	--	--	--	Average
--	--	--	--	--	--	--	--	--	--	--	Maximum
--	--	--	--	--	--	--	--	--	--	--	Minimum
1	--	1	1	1	--	--	--	--	--	--	Samples
--	.158	--	--	.093	--	--	--	--	--	--	155
--	1	--	--	1	--	--	--	--	--	--	Samples
											156
.198	.242	.312	.414	.140	--	--	--	--	--	--	Average
.254	--	.392	.461	.146	--	--	--	--	--	--	Maximum
.142	--	.231	.367	.134	--	--	--	--	--	--	Minimum
2	1	2	2	2	--	--	--	--	--	--	Samples
											157
.253	--	.295	.323	.100	.102	--	--	--	--	--	Average
.276	--	.302	.327	.101	--	--	--	--	--	--	Maximum
.208	--	.288	.319	.100	--	--	--	--	--	--	Minimum
3	--	2	2	2	1	--	--	--	--	--	Samples
--	--	--	--	--	--	--	--	--	--	--	158
--	--	--	--	--	--	--	--	--	--	--	Samples
.200	.329	.294	.454	.111	--	--	--	--	--	--	159
1	1	1	1	1	--	--	--	--	--	--	Samples
--	--	--	--	--	--	--	--	--	--	--	160
--	--	--	--	--	--	--	--	--	--	--	Samples
											161
.269	.198	.343	.316	.132	.198	--	.784	--	--	--	Average
.378	.270	.517	.448	.200	.297	--	--	--	--	--	Maximum
.108	.127	.187	.168	.069	.100	--	--	--	--	--	Minimum
10	2	9	8	6	2	--	1	--	--	--	Samples

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

ITEM NUMBER AND DESCRIPTION	TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
						METHIONINE	CYSTINE	TOTAL
VEGETABLES--Continued								
LEAFY VEGETABLES--Continued								
162 Turnip greens (Brassica rapa):								
Average....................grams..	0.098	0.270	0.230	0.447	0.278	0.113	0.096	0.209
Maximum....................do...	.116	.299	.278	.582	.479	.159	--	--
Minimum....................do...	.081	.250	.159	.351	.187	.016	--	--
Samples....................number..	4	4	4	4	4	4	1	--
163 Watercress (Rorippa nasturtium-aquaticum):								
Average....................grams..	.103	.310	.280	.483	.336	.037	--	--
Maximum....................do...	.130	.333	--	--	.348	.068	--	--
Minimum....................do...	.076	.287	--	--	.326	.020	--	--
Samples....................number..	2	2	1	1	3	3	--	--
STARCHY ROOTS AND TUBERS:								
164 Apio arracacia (Arracacia xanthorrhiza)..grams..	.042	--	--	--	.217	.017	--	--
Samples....................number..	1	--	--	--	1	1	--	--
165 Cassava, root and flour (Manihot esculenta):								
Average....................grams..	.081	.172	.174	.257	.258	.039	.069	.108
Maximum....................do...	.329	.238	.331	.350	.500	.089	.162	--
Minimum....................do...	.004	.118	.115	.184	.065	.000	.033	--
Samples....................number..	13	7	7	7	12	13	13	--
166 Potatoes (Solanum tuberosum):								
Average....................grams..	.067	.246	.274	.311	.333	.078	.060	.138
Maximum....................do...	.111	.292	.331	.352	.419	.104	.106	--
Minimum....................do...	.044	.215	.226	.268	.292	.038	.036	--
Samples....................number..	6	7	5	5	8	8	3	--
167 Sweetpotatoes (Ipomaea batatas):								
Average....................grams..	.109	.294	.301	.358	.295	.116	.100	.216
Maximum....................do...	.171	.369	.388	.425	.373	.170	--	--
Minimum....................do...	.050	.211	.225	.303	.183	.050	--	--
Samples....................number..	10	7	6	6	10	10	1	--
168 Taro (Colocasia spp.):								
Average....................grams..	.115	.294	.325	.556	.363	.070	--	--
Maximum....................do...	.142	--	--	--	.388	.079	--	--
Minimum....................do...	.088	--	--	--	.338	.062	--	--
Samples....................number..	2	1	1	1	2	2	--	--
169 Yam (Dioscorea spp.):								
Average....................grams..	.103	--	--	--	.326	.100	--	--
Maximum....................do...	.112	--	--	--	.393	.207	--	--
Minimum....................do...	.093	--	--	--	.262	.038	--	--
Samples....................number..	3	--	--	--	3	3	--	--
170 Yautia malange (Xanthosoma sagittaefolium)grams.	.085	--	--	--	.246	.058	--	--
Samples..............................	1	--	--	--	1	1	--	--
OTHER VEGETABLES:								
171 Asparagus (Asparagus officinalis):								
Average....................grams..	.076	.188	.228	.272	.294	.090	--	--
Maximum....................do...	.099	.190	.231	.336	.315	.101	--	--
Minimum....................do...	.054	.185	.224	.208	.274	.080	--	--
Samples....................number..	2	2	2	2	2	2	--	--

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
											162
0.315	0.226	0.321	0.360	0.110	--	--	--	--	--	--	Average
.335	.230	.402	.482	.157	--	--	--	--	--	--	Maximum
.291	.223	.270	.281	.088	--	--	--	--	--	--	Minimum
4	2	4	4	4	--	--	--	--	--	--	Samples
											163
.227	.133	.309	.194	.126	0.222	0.889	0.600	--	--	--	Average
.232	--	.351	--	--	--	--	--	--	--	--	Maximum
.222	--	.267	--	--	--	--	--	--	--	--	Minimum
2	1	2	1	1	1	1	1	--	--	--	Samples
--	--	--	--	--	--	--	--	--	--	--	164
--	--	--	--	--	--	--	--	--	--	--	Samples
											165
.175	.117	.190	.623	.096	.316	.331	.763	0.177	0.139	0.164	Average
.223	.216	.281	1.359	.219	.422	.433	1.174	.232	.185	.211	Maximum
.133	.081	.126	.076	.061	.252	.244	.509	.134	.093	.126	Minimum
7	8	7	24	8	6	6	6	6	6	6	Samples
											166
.276	.112	.334	.308	.090	.292	--	.625	--	.208	.250	Average
.338	.125	.378	.359	.106	--	--	--	--	--	--	Maximum
.193	.099	.296	.270	.075	--	--	--	--	--	--	Minimum
7	2	7	6	6	1	--	1	--	1	1	Samples
											167
.348	.281	.468	.326	.124	--	--	1.158	--	--	.158	Average
.423	--	.611	.579	.164	--	--	--	--	--	--	Maximum
.268	--	.263	.183	.085	--	--	--	--	--	--	Minimum
6	1	7	7	6	--	--	1	--	--	1	Samples
											168
.325	--	.375	.388	.106	--	--	--	--	--	--	Average
--	--	--	--	--	--	--	--	--	--	--	Maximum
--	--	--	--	--	--	--	--	--	--	--	Minimum
1	--	1	1	1	--	--	--	--	--	--	Samples
											169
--	--	--	--	--	--	--	--	--	--	--	Average
--	--	--	--	--	--	--	--	--	--	--	Maximum
--	--	--	--	--	--	--	--	--	--	--	Minimum
--	--	--	--	--	--	--	--	--	--	--	Samples
--	--	--	--	--	--	--	--	--	--	--	170
--	--	--	--	--	--	--	--	--	--	--	Samples
											171
.196	--	.301	.349	.103	--	--	--	--	--	--	Average
.210	--	.315	.357	.118	--	--	--	--	--	--	Maximum
.182	--	.287	.341	.088	--	--	--	--	--	--	Minimum
2	--	2	2	2	--	--	--	--	--	--	Samples

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

ITEM NUMBER AND DESCRIPTION	TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
						METHIONINE	CYSTINE	TOTAL
VEGETABLES--Continued								
OTHER VEGETABLES--Continued								
172 Beans, snap (Phaseolus vulgaris):								
Average...grams..	0.086	0.236	0.282	0.362	0.328	0.090	0.063	0.153
Maximum...do...	.121	.239	.283	.386	.360	.147	--	--
Minimum...do...	.067	.233	.282	.337	.279	.031	--	--
Samples...number..	3	2	2	2	3	9	1	--
173 Beets (Beta vulgaris):								
Average...grams..	.054	.133	.201	.214	.336	.024	--	--
Maximum...do...	--	.151	--	--	.462	.031	--	--
Minimum...do...	--	.115	--	--	.210	.017	--	--
Samples...number..	1	2	1	1	2	2	--	--
174 Broccoli (Brassica oleracea var. botrytis):								
Average...grams..	.071	.231	.239	.308	.278	.094	--	--
Maximum...do...	.082	.268	.294	.394	.424	.156	--	--
Minimum...do...	.054	.194	.208	.237	.153	.070	--	--
Samples...number..	9	9	9	9	9	9	--	--
175 Carrots (Daucus carota):								
Average...grams..	.050	.223	.240	.339	.270	.054	.153	.207
Maximum...do...	.074	.281	.300	.400	.356	.079	--	--
Minimum...do...	.023	.169	.177	.288	.144	.019	--	--
Samples...number..	7	6	6	5	6	6	1	--
176 Cauliflower (Brassica oleracea var. botrytis):								
Average...grams..	.087	.265	.271	.421	.350	.123	--	--
Maximum...do...	.112	.319	.288	.462	.375	.175	--	--
Minimum...do...	.056	.179	.256	.327	.327	.032	--	--
Samples...number..	4	5	4	4	5	5	--	--
177 Celery (Apium graveolens var. dulce)...grams..	.060	--	--	--	.102	.074	.028	.102
Samples...number..	1	--	--	--	1	1	1	--
178 Chayote (Sechium edule)...grams..	.082	--	--	--	.400	.009	--	--
Samples...number..	1	--	--	--	1	1	--	--
179 Cowpeas, yardlong (Vigna sesquipedalis):								
Average...grams..	.062	--	--	--	.374	.038	--	--
Maximum...do...	.065	--	--	--	.444	.038	--	--
Mimumum...do...	.060	--	--	--	.304	.037	--	--
Samples...number..	2	--	--	--	2	2	--	--
180 Cucumbers (Cucumus sativus):								
Average...grams..	.048	.167	.196	.265	.273	.059	--	--
Maximum...do...	.055	--	--	--	.294	.098	--	--
Minimum...do...	.040	--	--	--	.253	.033	--	--
Samples...number..	3	1	1	1	3	3	--	--
181 Cushaw (Cucurbita moschata)...grams..	.058	--	--	--	.183	.033	--	--
Samples...number..	1	--	--	--	1	1	--	--
182 Eggplant (Solanum melongena):								
Average...grams..	.059	.214	.318	.384	.171	.033	--	--
Maximum...do...	.067	.231	--	.393	.340	.053	--	--
Minimum...do...	.051	.197	--	.374	.073	.013	--	--
Samples...number..	3	2	1	2	3	2	--	--
183 Mallow (Malva sp.)...grams..	.244	.262	--	.438	.262	.050	--	--
Samples...number..	1	1	--	1	1	1	--	--

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
											172
0.149	0.131	0.300	0.263	0.118	0.253	--	--	--	--	--	Average
.219	.194	.308	.272	.134	--	--	--	--	--	--	Maximum
.079	.068	.291	.254	.108	--	--	--	--	--	--	Minimum
3	2	2	2	3	1	--	--	--	--	--	Samples
											173
.104	--	.192	.111	.085	--	0.615	1.000	--	0.115	--	Average
.115	--	--	--	--	--	--	--	--	--	--	Maximum
.094	--	--	--	--	--	--	--	--	--	--	Minimum
2	--	1	1	1	--	1	1	--	1	--	Samples
											174
.226	--	.322	.364	.119	--	--	--	--	--	--	Average
.272	--	.396	.422	.143	--	--	--	--	--	--	Maximum
.174	--	.206	.305	.100	--	--	--	--	--	--	Minimum
9	--	9	9	8	--	--	--	--	--	--	Samples
											175
.219	.103	.291	.216	.086	.302	.467	1.133	--	--	0.200	Average
.319	.133	.425	.344	.119	--	--	--	--	--	--	Maximum
.163	.073	.208	.088	.046	--	--	--	--	--	--	Minimum
7	2	6	4	6	1	1	1	--	--	1	Samples
											176
.196	.089	.374	.286	.126	.500	.518	.482	0.429	--	--	Average
.231	--	.456	.312	.138	--	--	--	--	--	--	Maximum
.107	--	.327	.234	.109	--	--	--	--	--	--	Minimum
5	1	5	4	4	1	1	1	1	--	--	Samples
--	.077	--	--	--	--	--	--	--	--	--	177
--	1	--	--	--	--	--	--	--	--	--	Samples
--	--	--	--	--	--	--	--	--	--	--	178
--	--	--	--	--	--	--	--	--	--	--	Samples
											179
--	--	--	--	--	--	--	--	--	--	--	Average
--	--	--	--	--	--	--	--	--	--	--	Maximum
--	--	--	--	--	--	--	--	--	--	--	Minimum
--	--	--	--	--	--	--	--	--	--	--	Samples
											180
.147	--	.216	.471	.088	--	--	--	--	--	--	Average
--	--	--	--	--	--	--	--	--	--	--	Maximum
--	--	--	--	--	--	--	--	--	--	--	Minimum
1	--	1	1	1	--	--	--	--	--	--	Samples
--	--	--	--	--	--	--	--	--	--	--	181
--	--	--	--	--	--	--	--	--	--	--	Samples
											182
.271	--	.368	.211	.107	--	--	--	--	--	--	Average
--	--	--	--	--	--	--	--	--	--	--	Maximum
--	--	--	--	--	--	--	--	--	--	--	Minimum
1	--	1	1	1	--	--	--	--	--	--	Samples
.281	--	.306	.319	.106	--	--	--	--	--	--	183
1	--	1	1	1	--	--	--	--	--	--	Samples

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

ITEM NUMBER AND DESCRIPTION		TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
							METHIONINE	CYSTINE	TOTAL
	VEGETABLES--Continued								
	OTHER VEGETABLES--Continued								
	Mushrooms:								
184	(Agaricus campestris)..................grams..	0.010	--	0.918	0.484	--	0.288	--	--
	Samples........................number..	1	--	1	1	--	1	--	--
185	(Lactarius spp.)........................grams..	.008	0.226	.292	.202	.127	.030	--	--
	Samples........................number..	1	1	1	1	1	1	--	--
186	Okra (Hibiscus esculentus):								
	Average............................grams..	.064	.228	.241	.351	0.265	.078	0.058	0.136
	Maximum............................do...	.084	.239	.262	.384	.308	.108	.066	--
	Minimum............................do...	.044	.222	.220	.314	.156	.054	.051	--
	Samples........................number..	5	3	3	3	5	5	2	--
187	Onions (Allium cepa):								
	Average............................grams..	.092	.098	.092	.165	.284	.060	--	--
	Maximum............................do...	--	.103	--	--	--	.073	--	--
	Minimum............................do...	--	.092	--	--	--	.046	--	--
	Samples........................number..	1	2	1	1	1	2	--	--
188	Peppers (Capsicum frutescens):								
	Average............................grams..	.045	.261	.237	.239	.266	.081	--	--
	Maximum............................do...	.062	.278	.255	.262	.394	.225	--	--
	Minimum............................do...	.037	.250	.226	.225	.184	.020	--	--
	Samples........................number.	4	3	3	3	5	5	--	--
189	Pricklypears, Nopales (Opuntia spp.).....grams..	.051	.301	.250	.326	.250	.046	--	--
	Samples........................number..	1	1	1	1	1	1	--	--
190	Pumpkin (Cucurbita pepo):								
	Average............................grams..	.082	.148	.231	.328	.304	.056	--	--
	Maximum............................do...	--	.172	--	--	.358	.075	--	--
	Minimum............................do...	--	.125	--	--	.250	.038	--	--
	Samples........................number..	1	2	1	1	2	2	--	--
191	Radishes (Raphanus sativus)..............grams..	.024	.308	--	--	.176	.009	--	--
	Samples........................number..	1	1	--	--	1	1	--	--
192	Seepweed (Dondia spp.)...................grams..	.066	.214	.272	.366	.214	.032	--	--
	Samples........................number..	1	1	1	1	1	1	--	--
193	Soybean sprouts (Glycine max)............grams..	--	.160	.227	.267	.213	.045	--	--
	Samples........................number..	--	1	1	1	1	1	--	--
194	Squash, summer (Cucurbita pepo)..........grams..	.056	.143	.198	.278	.238	.079	--	--
	Samples........................number..	1	1	1	1	1	1	--	--
195	Tomatoes and cherry tomatoes (Lycopersicon esculentum and L. e. cerasiforme):								
	Average............................grams..	.054	.207	.182	.255	.260	.042	--	--
	Maximum............................do...	.084	.231	--	--	.310	.058	--	--
	Minimum............................do...	.029	.182	--	--	.154	.012	--	--
	Samples........................number..	4	3	1	1	6	5	--	--
196	Turnips (Brassica rapa)...................grams..	--	--	.116	--	.324	.066	--	--
	Samples........................number..	--	--	1	--	1	1	--	--
197	Waxgourd, Chinese (Benincasa hispida)....grams..	.038	--	--	--	.138	.050	--	--
	Samples........................number..	1	--	--	--	1	1	--	--

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
--	--	0.652	0.406	--	--	--	--	--	--	--	184
--	--	1	1	--	--	--	--	--	--	--	Samples
0.026	--	.168	.030	0.039	--	--	--	--	--	--	185
1	--	1	1	1	--	--	--	--	--	--	Samples
											186
.226	0.275	.315	.322	.103	--	--	--	--	--	--	Average
.247	--	.368	.411	.130	--	--	--	--	--	--	Maximum
.208	--	.286	.158	.066	--	--	--	--	--	--	Minimum
3	1	3	3	3	--	--	--	--	--	--	Samples
											187
.174	.206	.138	.802	.064	--	--	0.928	--	--	--	Average
--	--	--	1.193	--	--	--	--	--	--	--	Maximum
--	--	--	.412	--	--	--	--	--	--	--	Minimum
1	1	1	2	1	--	--	1	--	--	--	Samples
											188
.286	--	.173	.126	.071	--	--	--	--	--	--	Average
.302	--	.175	.127	.074	--	--	--	--	--	--	Maximum
.262	--	.170	.125	.070	--	--	--	--	--	--	Minimum
3	--	3	3	3	--	--	--	--	--	--	Samples
.337	--	.234	.179	.092	--	--	--	--	--	--	189
1	--	1	1	1	--	--	--	--	--	--	Samples
											190
.167	.083	.233	.224	.097	0.333	--	.750	--	--	0.167	Average
.209	--	.299	--	--	--	--	--	--	--	--	Maximum
.125	--	.167	--	--	--	--	--	--	--	--	Minimum
2	1	2	1	1	1	--	1	--	--	1	Samples
--	--	.154	--	--	--	0.538	1.308	--	--	.308	191
--	--	1	--	--	--	1	1	--	--	1	Samples
.280	--	.219	.148	.087	--	--	--	--	--	--	192
1	--	1	1	1	--	--	--	--	--	--	Samples
.187	--	.227	.227	.134	--	--	--	--	--	--	193
1	--	1	1	1	--	--	--	--	--	--	Samples
.166	--	.230	.277	.095	--	--	--	--	--	--	194
1	--	1	1	1	--	--	--	--	--	--	Samples
											195
.178	.090	.174	.182	.094	.316	.678	1.488	0.207	--	.207	Average
.207	.103	.209	.209	.118	.483	.769	1.769	--	--	--	Maximum
.154	.077	.138	.154	.069	.154	.586	1.207	--	--	--	Minimum
3	2	2	2	2	2	2	2	1	--	1	Samples
.113	.164	--	--	--	.376	--	--	--	--	--	196
1	1	--	--	--	1	--	--	--	--	--	Samples
--	--	--	--	--	--	--	--	--	--	--	197
--	--	--	--	--	--	--	--	--	--	--	Samples

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

ITEM NUMBER AND DESCRIPTION	TRYPTO-PHAN	THREO-NINE	ISO-LEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
						METH-IONINE	CYSTINE	TOTAL
MISCELLANEOUS FOOD ITEMS:								
198 Vegetable patty or steak (principally wheat protein), canned, drained:								
Average..........................grams..	0.054	0.156	0.336	0.410	0.122	0.096	--	--
Maximum..........................do...	.054	.168	.339	.419	.125	.098	--	--
Minimum..........................do...	.053	.144	.332	.400	.119	.095	--	--
Samples..........................number..	2	2	2	2	2	2	--	--
Yeast:								
199 Baker's:								
Average..........................grams..	.058	.312	.312	.548	.435	.118	0.057	0.175
Maximum..........................do...	.075	.342	.356	.888	.482	.188	.107	--
Minimum..........................do...	.031	.296	.262	.415	.400	.088	.040	--
Samples..........................number..	3	4	4	4	5	4	6	--
200 Brewer's, dried:								
Average..........................grams..	.096	.318	.324	.436	.446	.113	.074	.187
Maximum..........................do...	.169	.406	.394	.488	.569	.188	.138	--
Minimum..........................do...	.050	.194	.192	.359	.369	.062	.006	--
Samples..........................number..	20	12	15	15	17	21	16	--
Primary, dried:								
201 (Saccharomyces cerevisiae):								
Average..........................grams..	.086	.318	.366	.446	.451	.115	.060	.175
Maximum..........................do...	.099	.375	.404	.531	.506	.175	.069	--
Minimum..........................do...	.075	.188	.206	.300	.397	.059	.056	--
Samples..........................number..	14	16	16	16	16	25	7	--
202 (Torulopsis utilis):								
Average..........................grams..	.086	.315	.449	.501	.493	.096	.057	.153
Maximum..........................do...	.119	.340	.536	.548	.545	.164	.118	--
Minimum..........................do...	.035	.262	.344	.449	.425	.029	.025	--
Samples..........................number..	10	7	6	6	6	8	11	--

TABLE 1.--AMINO ACIDS PER GRAM OF TOTAL NITROGEN IN EDIBLE PORTION OF FOODS--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
											198
0.308	--	0.268	0.227	0.122	--	--	--	--	--	--	Average
.314	--	.268	.228	.123	--	--	--	--	--	--	Maximum
.303	--	.268	.226	.121	--	--	--	--	--	--	Minimum
2	--	2	2	2	--	--	--	--	--	--	Samples
											199
.289	0.276	.400	.255	.168	0.572	0.760	1.158	0.375	0.247	0.300	Average
.353	.388	.585	.296	.258	--	--	--	--	--	--	Maximum
.244	.217	.312	.155	.119	--	--	--	--	--	--	Minimum
5	6	4	5	5	1	1	1	1	1	1	Samples
											200
.257	.257	.368	.304	.169	.467	.707	.856	.328	.268	.359	Average
.356	.400	.444	.406	.258	.572	.769	1.263	.381	.319	.469	Maximum
.118	.170	.294	.162	.112	.312	.665	.688	.232	.238	.150	Minimum
18	19	13	16	17	6	3	6	7	3	6	Samples
											201
.245	.334	.345	.261	.149	.181	.338	.776	.230	--	.288	Average
.291	.531	.416	.438	.202	--	--	1.010	.272	--	--	Maximum
.165	.156	.250	.191	.094	--	--	.444	.069	--	--	Minimum
16	15	16	16	16	1	1	8	8	--	1	Samples
											202
.319	.333	.392	.451	.169	--	--	.859	.425	--	--	Average
.397	.384	.411	.538	.177	--	--	.909	.492	--	--	Maximum
.244	.281	.369	.366	.161	--	--	.834	.290	--	--	Minimum
6	6	6	5	5	--	--	3	3	--	--	Samples

DISCUSSION OF DATA IN TABLE 2

Average amino acid contents of foods per 100 grams of the edible portion are shown in table 2. These values were calculated from the average amino acid content per gram of nitrogen shown in table 1 and the nitrogen content equivalent to the protein listed for the foods in the first column of table 2. Table 2 is to be used when an average protein content may be assumed. When the specific nitrogen (or protein) content of a food is known, use of data from table 1 would be preferable.

The protein content shown for an item was usually taken either from previous publications on food composition from this Department (7, 18, 27) or from the international tables of the Food and Agriculture Organization (5, 6). (These publications also give data for moisture, ash, and other proximate constituents corresponding to the protein specified.)

Only a limited number of items is included in table 2. For example, no items that required calculation from recipes were included. The drained solids of cooked and canned foods have been omitted because there may well be loss of the more soluble protein when the liquid is poured off, with greater loss of some amino acids than of others.

Procedure for calculating protein in foods. Since the procedure for obtaining figures on the protein content of foods is not generally understood, a brief explanation is included here.

Most of the nitrogen that occurs in foods and feeds is in the form of protein or its related products, peptides and amino acids. As compared with determinations of total nitrogen, protein analyses are not very satisfactory. However, as all proteins contain nitrogen, it has long been customary to determine total nitrogen chemically and from this analysis to calculate protein.

Some of the first proteins analyzed were found to contain close to 16 percent nitrogen. The protein content of foods containing these proteins could be calculated by multiplying the nitrogen content found from analysis by the factor 6.25 $[100 \div 16 = 6.25]$. The results have sometimes been labeled "crude protein" to call attention to the fact that for the purpose of calculation, all nitrogen present was counted as protein nitrogen. From the first this assumption was known to introduce some error. Small amounts of other nitrogenous compounds such as choline, nitrates, nitrites, purine bases, and more recently several nitrogen-containing vitamins have been found in foods.

A food usually has more than one kind of protein and these proteins may differ in nitrogen content. Jones, in 1931, reported an extensive study of data available from his own research and from the literature on the composition of proteins in different foods and feeds (15). In the report he showed that the nitrogen content of protein in some of the well-known items of food varies considerably--from a high of 19.3 percent for amandin in almonds to a low of 13.4 percent for an alcohol-alkali soluble protein in avocado. Taking into consideration the various nitrogenous compounds and especially the nitrogen content of the chief protein or proteins present, he derived special factors for converting nitrogen to protein in foods for which he considered there was sufficient information.

The figures for protein in tables of food composition issued by the U. S. Department of Agriculture have been calculated by use of the factors published by Jones and a few additional factors recommended by him later in personal communication. These factors are as follows:

Food	Factor
Animal origin	
Eggs	6.25
Gelatin	5.55
Meat	6.25
Milk	6.38
Plant origin	
Grains and cereals:	
Barley	5.83
Corn (maize)	6.25
Millets	5.83
Oats	5.83
Rice	5.95
Rye	5.83
Sorghums	6.25
Wheat:	
Whole kernel	5.83
Bran	6.31
Embryo	5.80
Endosperm	5.70
Legumes:	
Beans:	
Adzuki	6.25
Castor	5.30
Jack	6.25
Lima	6.25
Mung	6.25
Navy	6.25
Plant origin	
Legumes--Continued	
Beans--Continued	
Soybeans	5.71
Velvetbeans	6.25
Peanuts	5.46
Nuts:	
Almonds	5.18
Brazil	5.46
Butternuts	5.30
Cashew	5.30
Chestnuts	5.30
Coconuts	5.30
Hazelnuts	5.30
Hickory	5.30
Pecans	5.30
Pine nuts	5.30
Pistachio	5.30
Walnuts	5.30
Seeds:	
Cantaloup	5.30
Cottonseed	5.30
Flaxseed	5.30
Hempseed	5.30
Pumpkin	5.30
Sesame	5.30
Sunflower	5.30

The use of the factors listed above to obtain figures for protein content involves two assumptions: That all the nitrogen present is protein nitrogen, and that the protein or mixture of proteins on which the particular factor for a food was based has the same nitrogen content as other proteins that may be present in the food. Neither of these assumptions is entirely valid.

For items in table 2 that are not listed above, the nitrogen factor predominating for other items in the food group was assumed. For example, for oilseeds and nuts not listed, the factor 5.3 was used; for additional legumes and for all fruits and vegetables, 6.25. The nitrogen conversion factors actually used in making the calculations for each food have been indicated in the table.

TABLE 2.--AMINO ACID CONTENT OF FOODS, 100 GRAMS, EDIBLE PORTION

	ITEM, PROTEIN CONTENT, AND NITROGEN CONVERSION FACTOR	TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
							METHIONINE	CYSTINE	TOTAL
		Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.
	MILK; MILK PRODUCTS:								
	MILK (Protein, N x 6.38):								
	Cow:								
1	Fluid, whole and nonfat (3.5% protein)........	0.049	0.161	0.223	0.344	0.272	0.086	0.031	0.117
	Canned:								
2	Evaporated, unsweetened (7.0% protein)......	.099	.323	.447	.688	.545	.171	.063	.234
3	Condensed, sweetened (8.1% protein).........	.114	.374	.518	.796	.631	.198	.072	.271
	Dried:								
4	Whole (25.8% protein)......................	.364	1.191	1.648	2.535	2.009	.632	.231	.863
5	Nonfat (35.6% protein).....................	.502	1.641	2.271	3.493	2.768	.870	.318	1.188
6	Goat (3.3% protein)............................	.039	.217	.087	.278	.312	.065	--	--
7	Human (1.4% protein)...........................	.023	.062	.075	.124	.090	.028	.027	.055
8	Indian buffalo (4.2% protein)..................	.059	.212	.204	.420	.331	.112	.058	.170
	MILK PRODUCTS:								
9	Buttermilk (3.5% protein, N x 6.38)............	.038	.165	.219	.348	.291	.082	.032	.114
10	Casein (100.0% protein, N x 6.29)..............	1.335	4.277	6.550	10.048	8.013	3.084	.382	3.466
	Cheese (protein, N x 6.38):								
11	Blue mold (21.5% protein)....................	.293	.799	1.449	2.096	1.577	.559	.121	.680
12	Camembert (17.5% protein)....................	.239	.650	1.179	1.706	1.284	.455	.099	.554
13	Cheddar (25.0% protein)......................	.341	.929	1.685	2.437	1.834	.650	.141	.791
14	Cheddar processed (23.2% protein)............	.316	.862	1.563	2.262	1.702	.604	.131	.735
15	Cheese foods, cheddar (20.5% protein)........	.280	.761	1.382	1.998	1.504	.533	.116	.649
16	Cottage (17.0% protein)......................	.179	.794	.989	1.826	1.428	.469	.147	.616
17	Cream cheese (9.0% protein)..................	.080	.408	.519	.923	.721	.229	.085	.314
18	Limburger (21.2% protein)....................	.289	.788	1.429	2.067	1.555	.552	.120	.672
19	Parmesan(36.0% protein)......................	.491	1.337	2.426	3.510	2.641	.937	.203	1.140
20	Swiss (27.5% protein)........................	.375	1.021	1.853	2.681	2.017	.715	.155	.870
21	Swiss processed (26.4% protein)..............	.360	.981	1.779	2.574	1.937	.687	.149	.836
22	Lactalbumin (100.0% protein, N x 6.49).........	2.203	5.239	6.209	12.342	9.060	2.250	3.405	5.655
	Whey (Protein, N x 6.49)								
23	Fluid (0.9% protein).........................	.010	.048	.052	.074	.055	.013	.018	.031
24	Dried (12.7% protein)........................	.147	.677	.734	1.043	.769	.188	.250	.438
	EGGS, CHICKEN (Protein, N x 6.25):								
	Fresh or stored:								
25	Whole (12.8% protein)........................	.211	.637	.850	1.126	.819	.401	.299	.700
26	Whites (10.8% protein).......................	.164	.477	.698	.950	.648	.420	.263	.683
27	Yolks (16.3% protein)........................	.235	.827	.996	1.372	1.074	.417	.274	.691
	Dried:								
28	Whole (46.8% protein)........................	.771	2.329	3.108	4.118	2.995	1.468	1.093	2.561
29	Whites (85.9% protein).......................	1.306	3.793	5.553	7.559	5.154	3.340	2.089	5.429
30	Yolks (31.2% protein)........................	.449	1.582	1.907	2.626	2.057	.799	.524	1.323
	MEAT; POULTRY; FISH AND SHELLFISH; THEIR PRODUCTS:								
	MEAT (Protein, N x 6.25):								
	Beef carcass or side:								
31	Thin (18.8% protein).........................	.220	.830	.984	1.540	1.642	.466	.238	.704
32	Medium fat (17.5% protein)...................	.204	.773	.916	1.434	1.529	.434	.221	.655
33	Fat (16.3% protein)..........................	.190	.720	.853	1.335	1.424	.404	.206	.610
34	Very fat (13.7% protein).....................	.160	.605	.717	1.122	1.197	.340	.173	.513
35	Medium fat, trimmed to retail basis (18.2% protein)................................	.213	.804	.952	1.491	1.590	.451	.230	.681
	Beef cuts, medium fat:								
36	Chuck (18.6% protein)........................	.217	.821	.973	1.524	1.625	.461	.235	.696
37	Flank (19.9% protein)........................	.232	.879	1.041	1.630	1.738	.494	.252	.746
38	Hamburger (16.0% protein)....................	.187	.707	.837	1.311	1.398	.397	.202	.599
39	Porterhouse (16.4% protein)..................	.192	.724	.858	1.343	1.433	.407	.207	.614

TABLE 2.--AMINO ACID CONTENT OF FOODS, 100 GRAMS, EDIBLE PORTION--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	
0.170	0.178	0.240	0.128	0.092	0.121	0.255	0.819	0.069	0.389	0.206	1
.340	.357	.481	.256	.185	.242	.511	1.639	.138	.779	.413	2
.393	.413	.557	.296	.214	.280	.591	1.897	.160	.902	.478	3
1.251	1.316	1.774	.944	.680	.891	1.883	6.039	.510	2.871	1.523	4
1.724	1.814	2.444	1.300	.937	1.228	2.595	8.320	.703	3.956	2.098	5
.121	--	.139	.174	.068	--	--	--	--	--	--	6
.060	.071	.086	.055	.030	.048	.109	.229	.030	.104	.056	7
.177	--	.255	.136	.086	--	--	--	--	--	--	8
.186	.137	.262	.168	.099	--	--	.620	--	--	.133	9
5.389	5.819	7.393	4.070	3.021	3.354	7.393	23.052	1.987	11.749	6.645	10
1.153	1.028	1.543	.785	.701	.603	1.254	5.881	.330	2.463	1.294	11
.938	.837	1.256	.639	.571	1.020	1.020	4.787	.269	2.005	1.053	12
1.340	1.195	1.794	.913	.815	.701	1.457	6.837	.384	2.864	1.505	13
1.244	1.109	1.665	.847	.756	.651	1.353	6.345	.356	2.658	1.396	14
1.099	.980	1.472	.749	.668	.575	1.195	5.607	.315	2.349	1.234	15
.917	.917	.978	.802	.549	--	--	--	--	--	--	16
.547	.408	.538	.313	.278	--	--	--	--	--	--	17
1.136	1.014	1.522	.774	.691	.595	1.236	5.799	.326	2.429	1.276	18
1.930	1.721	2.584	1.315	1.174	1.010	2.099	9.847	.553	4.125	2.167	19
1.474	1.315	1.974	1.004	.896	.771	1.603	7.521	.422	3.151	1.655	20
1.415	1.262	1.895	.964	.861	.741	1.539	7.221	.406	3.025	1.589	21
4.360	3.806	5.686	3.498	1.911	6.348	9.907	16.086	--	4.129	4.129	22
.023	.009	.045	.017	.011	--	--	.097	--	--	.027	23
.323	.131	.640	.235	.159	--	--	1.360	--	--	.374	24
.739	.551	.950	.840	.307	--	.897	1.583	.453	.543	1.075	25
.689	.449	.842	.634	.233	.816	.850	1.521	.404	.408	.848	26
.717	.756	1.121	1.132	.368	--	.897	1.951	.571	.722	1.314	27
2.703	2.014	3.474	3.070	1.123	--	3.280	5.788	1.655	1.984	3.931	28
5.484	3.573	6.693	5.044	1.855	6.487	6.762	12.095	3.216	3.244	6.748	29
1.373	1.448	2.147	2.167	.704	--	1.717	3.734	1.093	1.383	2.516	30
.773	.638	1.044	1.212	.653	1.086	1.754	2.846	1.164	.926	.788	31
.720	.594	.972	1.128	.608	1.011	1.632	2.649	1.084	.862	.734	32
.670	.553	.905	1.051	.566	.941	1.520	2.467	1.009	.803	.683	33
.563	.465	.761	.883	.476	.791	1.278	2.074	.848	.675	.574	34
.748	.617	1.010	1.174	.632	1.051	1.698	2.755	1.127	.897	.763	35
.765	.631	1.033	1.199	.646	1.074	1.735	2.815	1.152	.917	.780	36
.818	.675	1.105	1.283	.691	1.149	1.856	3.012	1.232	.981	.834	37
.658	.543	.888	1.032	.556	.924	1.492	2.422	.991	.788	.671	38
.674	.556	.911	1.057	.569	.947	1.530	2.482	1.015	.808	.687	39

TABLE 2.--AMINO ACID CONTENT OF FOODS, 100 GRAMS, EDIBLE PORTION--CONTINUED

	ITEM, PROTEIN CONTENT, AND NITROGEN CONVERSION FACTOR	TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
							METHIONINE	CYSTINE	TOTAL
		Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.
	MEAT; POULTRY; FISH AND SHELLFISH; THEIR PRODUCTS--Continued								
	MEAT (Protein, N x 6.25)--Continued								
	Beef cuts, medium fat--Continued								
40	Rib roast (17.4% protein)	0.203	0.768	0.910	1.425	1.520	0.432	0.220	0.652
41	Round (19.5% protein)	.228	.861	1.020	1.597	1.704	.484	.246	.730
42	Rump (16.2% protein)	.189	.715	.848	1.327	1.415	.402	.205	.607
43	Sirloin (17.3% protein)	.202	.764	.905	1.417	1.511	.429	.219	.648
44	Beef, canned (25.0% protein)	.292	1.104	1.308	2.048	2.184	.620	.316	.936
45	Beef, dried or chipped (34.3% protein)	.401	1.515	1.795	2.810	2.996	.851	.434	1.285
	Lamb carcass or side:								
46	Thin (17.1% protein)	.222	.782	.886	1.324	1.384	.410	.224	.634
47	Medium fat (15.7% protein)	.203	.718	.814	1.216	1.271	.377	.206	.583
48	Fat (13.0% protein)	.168	.595	.674	1.007	1.052	.312	.171	.483
	Lamb cuts, medium fat:								
49	Leg (18.0% protein)	.233	.824	.933	1.394	1.457	.432	.236	.668
50	Rib (14.9% protein)	.193	.682	.772	1.154	1.206	.358	.195	.553
51	Shoulder (15.6% protein)	.202	.714	.809	1.208	1.263	.374	.205	.579
	Pork, packer's carcass or side:								
52	Thin (14.1% protein)	.183	.654	.724	1.038	1.157	.352	.165	.517
53	Medium fat (11.9% protein)	.154	.552	.611	.876	.977	.297	.139	.436
54	Fat (9.8% protein)	.127	.455	.503	.721	.804	.245	.114	.359
	Pork cuts, medium fat, fresh:								
55	Ham (15.2% protein)	.197	.705	.781	1.119	1.248	.379	.178	.557
56	Loin (16.4% protein)	.213	.761	.842	1.207	1.346	.409	.192	.601
57	Miscellaneous lean cuts (14.5% protein)	.188	.673	.745	1.067	1.190	.362	.169	.531
	Pork, cured:								
58	Bacon, medium fat (9.1% protein)	.095	.306	.399	.728	.587	.141	.106	.247
59	Fat back or salt pork (3.9% protein)	.006	.141	.110	.367	.317	.055	.043	.098
60	Ham (16.9% protein)	.162	.692	.841	1.306	1.420	.411	.273	.684
	Luncheon meat:								
61	Boiled ham (22.8% protein)	.219	.934	1.135	1.762	1.915	.554	.368	.923
62	Canned, spiced (14.9% protein)	.143	.610	.741	1.151	1.252	.362	.241	.603
63	Rabbit, domesticated, flesh only (21.0% protein)	--	1.021	1.082	1.636	1.818	.541	--	--
	Veal, carcass or side:								
64	Thin (19.7% protein)	.258	.854	1.040	1.444	1.645	.451	.233	.684
65	Medium fat (19.1% protein)	.251	.828	1.008	1.400	1.595	.437	.226	.663
66	Fat (18.5% protein)	.243	.802	.977	1.356	1.545	.423	.219	.642
	Veal cuts, medium fat:								
67	Round (19.5% protein)	.256	.846	1.030	1.429	1.629	.446	.231	.677
68	Shoulder (19.4% protein)	.255	.841	1.024	1.422	1.620	.444	.230	.674
69	Stew meat (18.3% protein)	.240	.793	.966	1.341	1.528	.419	.217	.636
	POULTRY (Protein, N x 6.25):								
	Chicken, flesh only:								
70	Broilers or fryers (20.6% protein)	.250	.877	1.088	1.490	1.810	.537	.277	.814
71	Hens (21.3% protein)	.259	.907	1.125	1.540	1.871	.556	.286	.842
72	Ducks, domesticated, flesh only (21.4% protein)	--	.935	1.109	1.657	1.842	.531	--	--
73	Turkey, flesh only (24.0% protein)	--	1.014	1.260	1.836	2.173	.664	.330	.994
	FISH AND SHELLFISH (Protein, N x 6.25):								
74	Blue fish (20.5% protein)	.203	.889	1.040	1.548	1.797	.597	.276	.873
	Cod:								
75	Fresh (16.5% protein)	.164	.715	.837	1.246	1.447	.480	.222	.702
76	Dried (81.8% protein)	.811	3.547	4.149	6.178	7.172	2.382	1.099	3.481
77	Croaker (17.8% protein)	.177	.772	.903	1.344	1.561	.518	.239	.757
78	Eel (18.6% protein)	.185	.806	.943	1.405	1.631	.542	.250	.792
79	Flounder (14.9% protein)	.148	.646	.756	1.125	1.306	.434	.200	.634
80	Haddock (18.2% protein)	.181	.789	.923	1.374	1.596	.530	.245	.775

TABLE 2.--AMINO ACID CONTENT OF FOODS, 100 GRAMS, EDIBLE PORTION--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	
0.715	0.590	0.966	1.122	0.604	1.005	1.623	2.634	1.077	0.857	0.729	40
.802	.661	1.083	1.257	.677	1.126	1.819	2.952	1.207	.961	.817	41
.666	.550	.899	1.045	.562	.936	1.511	2.452	1.003	.798	.679	42
.711	.587	.960	1.116	.601	.999	1.614	2.619	1.071	.853	.725	43
1.028	.848	1.388	1.612	.868	1.444	2.332	3.784	1.548	1.232	1.048	44
1.410	1.163	1.904	2.212	1.191	1.981	3.200	5.192	2.124	1.690	1.438	45
.695	.594	.843	1.114	.476	.955	1.576	2.594	.999	.791	.684	46
.638	.545	.774	1.022	.437	.877	1.447	2.381	.917	.726	.628	47
.528	.451	.641	.847	.362	.726	1.198	1.972	.759	.601	.520	48
.732	.625	.887	1.172	.501	1.005	1.659	2.730	1.051	.832	.720	49
.606	.517	.734	.970	.415	.832	1.373	2.260	.870	.689	.596	50
.634	.542	.769	1.016	.434	.871	1.438	2.366	.911	.721	.624	51
.555	.503	.733	.864	.487	.654	1.336	2.157	.699	.623	.573	52
.468	.425	.619	.729	.411	.552	1.127	1.820	.590	.526	.484	53
.386	.350	.510	.601	.339	.455	.928	1.499	.486	.433	.398	54
.598	.542	.790	.931	.525	.705	1.440	2.325	.754	.671	.618	55
.646	.585	.853	1.005	.567	.761	1.553	2.509	.813	.724	.666	56
.571	.517	.754	.889	.501	.673	1.373	2.218	.719	.640	.589	57
.434	.234	.434	.622	.246	--	.858	1.022	.858	.482	.352	58
.157	.052	.168	.379	.035	--	--	--	--	--	--	59
.646	.652	.879	1.068	.544	--	1.517	2.390	1.114	.846	.695	60
.872	.879	1.186	1.441	.733	--	2.047	3.225	1.503	1.142	.938	61
.570	.575	.775	.942	.479	--	1.337	2.107	.982	.746	.613	62
.793	--	1.021	1.176	.474	--	2.127	3.629	.958	--	--	63
.801	.709	1.018	1.283	.634	1.169	1.942	3.073	.942	.794	.867	64
.776	.688	.987	1.244	.614	1.134	1.882	2.980	.914	.770	.840	65
.752	.666	.956	1.205	.595	1.098	1.823	2.886	.885	.746	.814	66
.792	.702	1.008	1.270	.627	1.158	1.922	3.042	.933	.786	.858	67
.788	.698	1.003	1.263	.624	1.152	1.912	3.026	.928	.782	.854	68
.744	.659	.946	1.192	.589	1.086	1.804	2.855	.875	.738	.805	69
.811	.725	1.012	1.302	.593	--	2.024	3.309	1.378	--	--	70
.838	.750	1.046	1.346	.613	--	2.093	3.422	1.425	--	--	71
.842	--	1.027	1.301	.486	--	2.253	3.636	1.079	--	--	72
.960	--	1.187	1.513	.649	--	2.427	4.270	1.298	--	--	73
.761	.554	1.092	1.155	--	--	1.807	2.611	1.132	1.250	.633	74
.612	.446	.879	.929	--	--	1.455	2.101	.911	1.006	.510	75
3.036	2.212	4.358	4.607	--	--	7.211	10.418	4.515	4.987	2.526	76
.661	.481	.948	1.002	--	--	1.569	2.267	.983	1.085	.550	77
.690	.503	.991	1.048	--	--	1.640	2.369	1.027	1.134	.574	78
.553	.403	.794	.839	--	--	1.314	1.898	.822	.908	.460	79
.676	.492	.970	1.025	--	--	1.605	2.316	1.005	1.109	.562	80

TABLE 2.--AMINO ACID CONTENT OF FOODS, 100 GRAMS, EDIBLE PORTION--CONTINUED

	ITEM, PROTEIN CONTENT, AND NITROGEN CONVERSION FACTOR	TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
							METHIONINE	CYSTINE	TOTAL
		Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.
	MEAT; POULTRY; FISH AND SHELLFISH; THEIR PRODUCTS--Continued								
	FISH AND SHELLFISH(Protein, N x 6.25)--Continued								
81	Halibut (18.6% protein)	0.185	0.806	0.943	1.405	1.631	0.542	0.250	0.792
	Herring:								
82	Atlantic (18.3% protein)	.182	.793	.928	1.382	1.605	.533	.246	.779
83	Lake (18.5% protein)	.184	.802	.938	1.397	1.622	.539	.249	.788
84	Pacific (16.6% protein)	.165	.720	.842	1.254	1.455	.483	.223	.706
	Mackerel:								
85	Raw, common Atlantic (18.7% protein)	.186	.811	.948	1.412	1.640	.545	.251	.796
	Canned, solids and liquid:								
86	Atlantic (19.3% protein)	.191	.837	.979	1.458	1.692	.562	.259	821
87	Pacific (21.1% protein)	.209	.915	1.070	1.593	1.850	.614	.284	.898
	Salmon:								
88	Raw, Pacific (Chinook or King)(17.4% protein)	.173	.754	.883	1.314	1.526	.507	.234	.741
89	Canned, solids and liquid (Sockeye or red) (20.2% protein)	.200	.876	1.025	1.526	1.771	.588	.271	.859
	Sardines, canned, solids and liquid:								
90	Atlantic type (21.1% protein)	.209	.915	1.070	1.593	1.850	.614	.284	.898
91	Pacific type (17.7% protein)	.176	.767	.898	1.337	1.552	.515	.238	.753
92	Shrimp, canned, solids and liquid (18.7% protein)	.186	.811	.948	1.412	1.640	.545	.251	.796
	PRODUCTS FROM MEAT, POULTRY, AND FISH (Protein, N x 6.25):								
93	Brains (10.4% protein)	.138	.494	.504	.845	.760	.220	.145	.365
94	Chitterlings (8.6% protein)	.094	.398	.308	.457	.670	.193	.109	.302
95	Fish flour (76.0% protein)	.754	4.378	4.232	6.189	7.381	2.019	--	--
96	Gelatin (85.6% protein, N x 5.55)	.006	1.912	1.357	2.930	4.226	.787	.077	.864
97	Gizzard, chicken (23.1% protein)	.207	1.072	1.094	1.689	1.567	.554	.218	.772
	Heart:								
98	Beef or pork (16.9% protein)	.219	.776	.857	1.509	1.387	.403	.168	.571
99	Chicken (20.5% protein)	.266	.941	1.040	1.830	1.683	.489	.203	.692
	Kidney:								
100	Beef (15.0% protein)	.221	.665	.730	1.301	1.087	.307	.182	.489
101	Pork (16.3% protein)	.240	.722	.793	1.414	1.181	.334	.198	.532
102	Sheep (16.6% protein)	.244	.736	.807	1.440	1.203	.340	.202	.542
	Liver:								
103	Beef or pork (19.7% protein)	.296	.936	1.031	1.819	1.475	.463	.243	.706
104	Calf (19.0% protein)	.286	.903	.994	1.754	1.423	.447	.234	.681
105	Chicken (22.1% protein)	.332	1.050	1.156	2.040	1.655	.520	.272	.792
106	Sheep or lamb (21.0% protein)	.316	.998	1.099	1.939	1.572	.494	.259	.753
	Pancreas:								
107	Beef (13.5% protein)	.175	.626	.683	1.054	.996	.244	--	--
108	Pork (14.5% protein)	.188	.673	.733	1.132	1.070	.262	--	--
109	Pork and beef, canned (14.3% protein)	.151	.618	.730	1.190	1.345	.327	.261	.588
110	Potted meat (16.1% protein)	.149	.662	.641	1.203	1.061	.361	--	--
	Sausage:								
111	Bologna (14.8% protein)	.126	.606	.716	1.061	1.191	.313	.185	.498
112	Braunschweiger (15.4% protein)	.172	.668	.754	1.291	1.200	.320	.187	.507
113	Frankfurters (14.2% protein)	.120	.582	.686	1.018	1.143	.300	.177	.477
114	Head cheese (15.0% protein)	.079	.418	.509	.946	.907	.250	.209	.459
115	Liverwurst (16.7% protein)	.187	.724	.818	1.400	1.301	.347	.203	.550
116	Pork, links or bulk, raw (10.8% protein)	.092	.442	.524	.774	.869	.228	.135	.363
117	Pork, bulk, canned (15.4% protein)	.131	.631	.747	1.104	1.239	.325	.192	.517
118	Salami (23.9% protein)	.203	.979	1.159	1.713	1.923	.505	.298	.803
119	Vienna sausage, canned (15.8% protein)	.134	.647	.766	1.133	1.272	.334	.197	.531

TABLE 2.--AMINO ACID CONTENT OF FOODS, 100 GRAMS, EDIBLE PORTION--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	
0.690	0.503	0.991	1.048	--	--	1.640	2.369	1.027	1.134	0.574	81
.679	.495	.975	1.031	--	--	1.613	2.331	1.010	1.116	.565	82
.687	.500	.986	1.042	--	--	1.631	2.356	1.021	1.128	.571	83
.616	.449	.884	.935	--	--	1.463	2.114	.916	1.012	.513	84
.694	.506	.996	1.053	--	--	1.649	2.382	1.032	1.140	.577	85
.716	.522	1.028	1.087	--	--	1.701	2.458	1.065	1.177	.596	86
.783	.571	1.124	1.188	--	--	1.860	2.687	1.165	1.286	.652	87
.646	.470	.927	.980	--	--	1.534	2.216	.960	1.061	.537	88
.750	.546	1.076	1.138	--	--	1.781	2.573	1.115	1.231	.624	89
.783	.571	1.124	1.188	--	--	1.860	2.687	1.165	1.286	.652	90
.657	.479	.943	.997	--	--	1.560	2.254	.977	1.079	.547	91
.694	.506	.996	1.053	--	--	1.649	2.382	1.032	1.140	.577	92
.506	.433	.536	.614	0.278	0.599	1.135	1.456	.419	.478	.632	93
.359	.228	.462	1.406	.169	--	--	--	--	--	--	94
2.845	--	3.916	5.204	1.289	--	--	--	--	--	--	95
2.036	.401	2.421	7.866	.771	8.483	5.737	9.470	22.795	13.773	3.301	96
.968	.680	1.116	1.741	.480	--	--	--	--	--	--	97
.765	.627	.973	1.068	.433	1.114	1.782	2.515	.930	.814	.768	98
.928	.761	1.181	1.296	.525	1.351	2.162	3.050	1.128	.987	.932	99
.706	.557	.876	.934	.377	.912	1.538	1.958	.898	.775	.847	100
.767	.605	.952	1.015	.409	.991	1.672	2.128	.975	.842	.921	101
.781	.616	.969	1.033	.417	1.009	1.702	2.167	.993	.858	.938	102
.993	.738	1.239	1.201	.523	1.261	2.030	2.679	1.198	1.012	1.031	103
.958	.711	1.195	1.158	.505	1.216	1.958	2.584	1.155	.976	.994	104
1.114	.827	1.390	1.347	.587	1.414	2.277	3.006	1.344	1.135	1.156	105
1.058	.786	1.320	1.280	.558	1.344	2.164	2.856	1.277	1.079	1.099	106
.562	.590	.724	.771	.266	--	1.296	1.132	.823	--	--	107
.603	.633	.777	.828	.285	--	1.392	1.216	.884	--	--	108
.579	.570	.810	1.050	.460	--	1.489	2.009	1.119	.828	.599	109
.641	--	.943	1.002	.322	--	1.324	1.744	1.695	1.151	--	110
.540	.481	.744	1.028	.398	--	1.395	2.022	1.241	.843	.606	111
.700	.471	.956	.954	.458	--	1.491	1.762	1.380	.973	.752	112
.518	.461	.713	.986	.382	--	1.338	1.940	1.191	.809	.582	113
.569	.569	.617	1.075	.278	--	1.334	1.584	1.802	1.214	.588	114
.759	.510	1.037	1.034	.497	--	1.617	1.910	1.496	1.055	.815	115
.394	.351	.543	.750	.290	--	1.018	1.476	.905	.615	.442	116
.562	.500	.774	1.069	.414	--	1.451	2.104	1.291	.877	.631	117
.872	.776	1.201	1.660	.642	--	2.252	3.266	2.004	1.361	.979	118
.576	.513	.794	1.097	.425	--	1.489	2.159	1.325	.900	.647	119

TABLE 2.--AMINO ACID CONTENT OF FOODS, 100 GRAMS, EDIBLE PORTION--CONTINUED

	ITEM, PROTEIN CONTENT, AND NITROGEN CONVERSION FACTOR	TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
							METHIONINE	CYSTINE	TOTAL
		Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.
	MEAT; POULTRY; FISH AND SHELLFISH; THEIR PRODUCTS--Continued								
	PRODUCTS FROM MEAT, POULTRY, AND FISH (Protein, N x 6.25)--Continued								
	Tongue:								
120	Beef (16.4% protein)	0.197	0.708	0.792	1.286	1.364	0.357	0.207	0.564
121	Pork (16.8% protein)	.202	.726	.812	1.317	1.398	.366	.212	.578
122	Veal and pork loaf, canned (17.2% protein)	.198	.627	.859	1.236	1.258	.418	.209	.627
	LEGUMES(DRY SEED); COMMON NUTS; OTHER NUTS AND DRY SEEDS; THEIR PRODUCTS:								
	LEGUME SEEDS AND THEIR PRODUCTS:								
	Beans (Phaseolus vulgaris) (N x 6.25):								
123	Pinto and red Mexican (23.0% protein)	.213	.997	1.306	1.976	1.708	.232	.228	.460
	Red kidney:								
124	Raw (23.1% protein)	.214	1.002	1.312	1.985	1.715	.233	.229	.462
125	Canned, solids and liquid (5.7% protein)	.053	.247	.324	.490	.423	.057	.057	.114
	Other common beans including navy, peabean, white marrow:								
126	Raw (21.4% protein)	.199	.928	1.216	1.839	1.589	.216	.212	.428
127	Baked with pork, canned (5.8% protein)	.057	.274	.291	.486	.354	.059	.018	.077
128	Black gram, raw (23.6% protein, N x 6.25)	.242	.801	1.390	2.062	1.510	.332	.287	.619
129	Broadbeans, raw (25.4% protein, N x 6.25)	.236	.829	1.593	2.211	1.426	.106	.179	.285
130	Chickpeas (20.8% protein, N x 6.25)	.170	.739	1.195	1.538	1.434	.276	.296	.572
131	Cowpeas (22.9% protein, N x 6.25)	.220	.901	1.110	1.715	1.491	.352	.297	.649
132	Dolichos, twinflower (21.6% protein, N x 6.25)	.221	.836	1.448	1.707	1.700	.294	.480	.774
133	Lentils, whole (25.0% protein, N x 6.25)	.216	.896	1.316	1.760	1.528	.180	.204	.384
134	Lima beans (20.7% protein, N x 6.25)	.195	.980	1.199	1.722	1.378	.331	.311	.642
135	Lupine (32.3% protein, N x 6.25)	--	1.101	1.618	1.964	1.447	.114	--	--
136	Moth beans (24.4% protein, N x 6.25)	.164	--	1.093	1.484	1.202	.191	.109	.300
137	Mung beans (24.4% protein, N x 6.25)	.180	.765	1.351	2.202	1.667	.265	.152	.417
138	Peanuts (26.9% protein, N x 5.46)	.340	.828	1.266	1.872	1.099	.271	.463	.734
139	Peanut flour (51.2% protein, N x 5.46)	.647	1.575	2.410	3.563	2.091	.516	.881	1.397
140	Peanut butter (26.1% protein, N x 5.46)	.330	.803	1.228	1.816	1.066	.263	.449	.712
	Peas (Pisum sativum) (N x 6.25):								
141	Entire seeds (23.8% protein)	.251	.918	1.340	1.969	1.744	.286	.308	.594
142	Split (24.5% protein)	.259	.945	1.380	2.027	1.795	.294	.318	.612
143	Pigeonpeas, without seed coat (21.9% protein, N x 6.25)	.119	.834	1.346	1.717	1.580	.256	.308	.564
144	Soybeans, whole (34.9% protein, N x 5.71)	.526	1.504	2.054	2.946	2.414	.513	.678	1.191
	Soybean flour, flakes, and grits (protein, N x 5.71):								
145	Low fat (44.7% protein)	.673	1.926	2.630	3.773	3.092	.658	.869	1.527
146	Medium fat (42.5% protein)	.640	1.831	2.501	3.588	2.940	.625	.826	1.451
147	Full fat (35.9% protein)	.541	1.547	2.112	3.030	2.483	.528	.698	1.226
148	Soybean curd (7.0% protein, N x 5.71)	--	--	--	--	--	.081	.091	.172
149	Soybean milk (3.4% protein, N x 5.71)	.051	.176	.175	.305	.269	.054	.071	.125
150	Vetch (28.8% protein, N x 6.25)	.203	.899	2.198	2.290	1.898	.346	.336	.682
	COMMON NUTS AND THEIR PRODUCTS:								
151	Almonds (18.6 protein, N x 5.18)	.176	.610	.873	1.454	.582	.259	.377	.636
152	Brazil nuts (14.4% protein, N x 5.46)	.187	.422	.593	1.129	.443	.941	.504	1.445
153	Cashews (18.5% protein, N x 5.30)	.471	.737	1.222	1.522	.792	.353	.527	.880
154	Coconut (3.4% protein, N x 5.30)	.033	.129	.180	.269	.152	.071	.062	.133

TABLE 2.--AMINO ACID CONTENT OF FOODS, 100 GRAMS, EDIBLE PORTION--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	
0.661	0.548	0.840	1.065	0.412	1.044	1.616	2.506	1.097	0.918	0.764	120
.677	.562	.860	1.091	.422	1.070	1.656	2.567	1.124	.941	.782	121
.619	.468	.958	.916	.388	--	1.395	2.034	1.475	1.018	.658	122
1.270	.887	1.395	1.384	.655	1.310	1.542	3.680	.390	.990	1.196	123
1.275	.891	1.401	1.390	.658	1.316	1.549	3.696	.392	.994	1.201	124
.315	.220	.346	.343	.162	.325	.382	.912	.097	.245	.296	125
1.181	.825	1.298	1.287	.609	1.219	1.435	3.424	.363	.921	1.113	126
.333	.165	.312	.251	.186	--	--	--	--	--	--	127
1.242	.551	1.450	1.552	.559	.895	2.201	3.315	.982	.955	.955	128
1.057	.687	1.276	1.780	.748	.671	1.646	3.475	.947	1.150	1.451	129
1.012	.692	1.025	1.551	.559	.709	1.957	2.250	.745	1.225	.819	130
1.198	.678	1.293	1.473	.692	--	--	--	--	--	--	131
1.486	.560	1.286	1.230	.650	.954	2.945	3.269	.767	1.403	1.237	132
1.104	.664	1.360	1.908	.548	.888	2.920	3.700	1.300	1.080	1.140	133
1.222	.543	1.298	1.315	.669	--	--	--	--	--	--	134
1.271	--	1.328	2.718	.811	--	3.008	6.822	1.158	--	--	135
1.003	1.245	.695	--	.722	--	--	--	--	--	--	136
1.167	.390	1.444	1.370	.543	.730	2.093	2.811	.449	1.070	.734	137
1.557	1.104	1.532	3.296	.749	1.094	4.326	5.932	1.710	1.567	2.030	138
2.963	2.100	2.916	6.273	1.425	2.082	8.233	11.290	3.254	2.982	3.863	139
1.510	1.071	1.487	3.198	.727	1.061	4.197	5.755	1.659	1.520	1.969	140
1.200	.960	1.333	2.102	.651	.960	2.917	5.583	1.378	1.340	.925	141
1.235	.988	1.372	2.164	.670	.988	3.003	5.747	1.419	1.380	.953	142
1.875	.725	1.153	1.489	.617	.855	2.688	3.953	.746	1.163	1.303	143
1.889	1.216	2.005	2.763	.911	1.571	4.633	7.010	1.595	2.567	2.494	144
2.419	1.558	2.568	3.538	1.166	2.012	5.934	8.979	2.043	3.288	3.194	145
2.300	1.481	2.441	3.364	1.109	1.913	5.642	8.537	1.943	3.126	3.037	146
1.943	1.251	2.062	2.842	.937	1.616	4.766	7.211	1.641	2.641	2.565	147
--	--	--	--	--	--	--	--	--	--	--	148
.195	.193	.186	.302	.121	.156	.428	.550	.171	--	.242	149
1.014	.369	1.442	2.249	.659	.691	2.622	2.714	.516	1.470	.650	150
1.146	.618	1.124	2.729	.517	--	--	--	--	--	--	151
.617	.483	.823	2.247	.367	--	--	--	--	--	--	152
.946	.712	1.592	2.098	.415	--	--	--	--	--	--	153
.174	.101	.212	.486	.069	--	--	--	--	--	--	154

TABLE 2.--AMINO ACID CONTENT OF FOODS, 100 GRAMS, EDIBLE PORTION--CONTINUED

	ITEM, PROTEIN CONTENT, AND NITROGEN CONVERSION FACTOR	TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
							METHIONINE	CYSTINE	TOTAL
		Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.
	LEGUMES (DRY SEED); COMMON NUTS; OTHER NUTS AND DRY SEEDS; THEIR PRODUCTS--Continued								
	COMMON NUTS AND THEIR PRODUCTS--Continued								
155	Coconut meal (20.3% protein, N x 5.30)..........	0.199	0.770	1.076	1.605	0.908	0.421	0.372	0.793
156	Filberts (12.7% protein, N x 5.30)..............	.211	.415	.853	.939	.417	.139	.165	.304
	Peanuts. See Legumes.								
157	Pecans (9.4% protein, N x 5.30).................	.138	.389	.553	.773	.435	.153	.216	.369
158	Walnuts (English or Persian) (15.0% protein, N x 5.30)...................................	.175	.589	.767	1.228	.441	.306	.320	.626
	OTHER NUTS AND SEEDS AND THEIR PRODUCTS (Protein, N x 5.30):								
159	Acorns (10.4% protein).........................	.126	.434	.561	.808	.636	.139	.184	.323
160	Amaranth (14.6% protein).......................	.149	.832	.882	1.209	1.074	.372	.521	.893
161	Balsampear seed meal (41.9% protein)...........	--	--	--	--	1.265	--	.142	--
162	Breadnuttree, Ramon (9.6% protein).............	.261	.373	.543	1.041	.418	.056	--	--
163	Chinese tallow tree-nut flour (57.6% protein)...	.837	2.174	3.510	4.347	1.587	.924	.696	1.620
164	Chocolatetree, Nicaragua (38.5% protein)........	.588	1.496	2.092	3.952	2.223	.276	--	--
165	Cottonseed flour and meal (42.3% protein).......	.591	1.764	1.884	2.945	2.139	.666	.814	1.500
166	Earpodtree, Guanacaste (34.1% protein)..........	.444	1.165	2.213	4.581	1.930	.360	--	--
167	Leadtree (24.1% protein)........................	.191	.828	1.651	1.787	1.164	.055	--	--
168	Pumpkin seed (30.9% protein)....................	.560	.933	1.737	2.437	1.411	.577	--	--
169	Safflower seed meal (42.1% protein).............	.675	1.462	1.914	2.740	1.525	.731	--	--
	Sesame:								
170	Seed (19.3% protein)...........................	.331	.707	.951	1.679	.583	.637	.495	1.132
171	Meal (33.4% protein)...........................	.573	1.223	1.645	2.905	1.008	1.103	.857	1.960
	Sunflower:								
172	Kernel (23.0% protein).........................	.343	.911	1.276	1.736	.868	.443	.464	.907
173	Meal (39.5% protein)...........................	.589	1.565	2.191	2.981	1.491	.760	.797	1.557
	GRAINS AND THEIR PRODUCTS:								
174	Barley (12.8% protein, N x 5.83).................	.160	.433	.545	.889	.433	.184	.257	.441
175	Bread, white (4% nonfat dry milk, flour basis) (8.5% protein, N x 5.70)........................	.091	.282	.429	.668	.225	.142	.200	.342
	Buckwheat flour:								
176	Dark (11.7% protein, N x 6.25)..................	.165	.461	.440	.683	.687	.206	.228	.434
177	Light (6.4% protein, N x 6.25)..................	.090	.252	.241	.374	.376	.113	.125	.238
178	Cañihua (14.7% protein, N x 6.25).................	.118	.706	1.000	.851	.882	.263	.162	.425
	Cereal combinations:								
179	Corn and soy grits (18.0% protein, N x 6.25)....	.161	.792	.841	1.656	.772	.271	.311	.582
180	Infant food, precooked, mixed cereals with nonfat dry milk and yeast (19.4% protein, N x 6.25)......................................	.118	--	--	--	.273	.310	.137	.447
181	Oat-corn-rye mixture, puffed (14.5% protein, N x 5.83)......................................	.172	.545	.841	1.368	.343	.388	.234	.622
182	Corn, field (10.0% protein, N x 6.25).............	.061	.398	.462	1.296	.288	.186	.130	.316
183	Corn flour (7.8% protein, N x 6.25)...............	.047	.311	.361	1.011	.225	.145	.101	.246
184	Corn grits (8.7% protein, N x 6.25)...............	.053	.347	.402	1.128	.251	.161	.113	.274
	Cornmeal:								
185	Whole ground (9.2% protein, N x 6.25)...........	.056	.367	.425	1.192	.265	.171	.119	.290
186	Degermed (7.9% protein, N x 6.25)...............	.048	.315	.365	1.024	.228	.147	.102	.249
	Corn products:								
187	Flakes (8.1% protein, N x 6.25).................	.052	.275	.306	1.047	.154	.135	.152	.157
188	Germ (14.5% protein, N x 6.25)..................	.144	.622	.578	1.030	.791	.232	.130	.362
189	Gluten (10.0% protein, N x 6.25)................	.059	.344	.443	1.563	.179	.282	.141	.423
190	Hominy (8.7% protein, N x 6.25).................	.084	.316	.349	.810	.358	.099	--	--

TABLE 2.—AMINO ACID CONTENT OF FOODS, 100 GRAMS, EDIBLE PORTION--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	
1.038	0.605	1.268	2.899	0.414	--	--	--	--	--	--	155
.537	.434	.934	2.171	.288	--	1.073	3.079	1.421	0.841	1.447	156
.564	.316	.525	1.185	.273	--	--	--	--	--	--	157
.767	.583	.974	2.287	.405	--	--	--	--	--	--	158
.473	--	.718	.722	.251	--	--	--	--	--	--	159
1.141	--	.849	1.747	.441	--	--	--	--	--	--	160
2.609	.617	--	5.914	.917	--	--	--	--	--	--	161
.453	--	.927	.884	.147	--	--	--	--	--	--	162
2.847	2.011	4.510	10.031	1.587	1.250	6.934	10.868	3.010	2.674	3.173	163
2.630	--	2.404	4.220	.683	--	--	--	--	--	--	164
2.610	1.365	2.458	5.603	1.325	2.155	5.148	9.122	2.322	1.868	2.283	165
1.325	--	1.570	2.857	1.004	--	--	--	--	--	--	166
.855	--	.864	2.410	.564	--	--	--	--	--	--	167
1.749	--	1.679	4.810	.711	--	--	--	--	--	--	168
2.605	--	2.446	4.623	.985	--	--	--	2.494	--	--	169
1.457	.951	.885	1.992	.441	.798	--	--	2.116	--	--	170
2.521	1.645	1.531	3.447	.763	1.380	--	--	3.661	--	--	171
1.220	.647	1.354	2.370	.586	.868	--	--	--	--	--	172
2.094	1.110	2.325	4.069	1.006	1.491	--	--	--	--	--	173
.661	.466	.643	.659	.239	.589	.712	2.861	.582	1.155	.595	174
.465	.243	.435	.340	.192	.268	.426	2.952	.301	1.006	--	175
.442	.240	.607	.930	.256	--	--	--	--	--	--	176
.242	.131	.332	.509	.140	--	--	--	--	--	--	177
.529	.294	.677	1.162	.367	--	--	--	--	--	--	178
.832	.562	1.054	.982	.472	--	--	--	--	--	--	179
.543	.447	--	.447	.233	--	--	--	--	--	--	180
.933	.622	.900	.776	.326	--	--	--	--	--	--	181
.454	.611	.510	.352	.206	.995	1.242	1.765	.339	.835	.565	182
.354	.477	.398	.275	.161	.776	.968	1.377	.265	.651	.441	183
.395	.532	.444	.306	.180	.866	1.080	1.535	.295	.727	.491	184
.418	.562	.470	.324	.190	.916	1.142	1.624	.312	.768	.520	185
.359	.483	.403	.278	.163	.786	.981	1.394	.268	.660	.446	186
.354	.283	.386	.231	.226	--	--	--	--	--	--	187
.483	.343	.789	1.134	.464	--	--	--	--	--	--	188
.558	.582	.512	.322	.200	--	.194	2.488	.403	--	--	189
.333	.331	.398	.444	.203	--	--	--	--	--	--	190

TABLE 2.--AMINO ACID CONTENT OF FOODS, 100 GRAMS, EDIBLE PORTION--CONTINUED

ITEM, PROTEIN CONTENT, AND NITROGEN CONVERSION FACTOR	TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
						METHIONINE	CYSTINE	TOTAL
	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.
GRAINS AND THEIR PRODUCTS--Continued								
Corn products--Continued								
191 Masa (2.8% protein, N x 6.25)	0.010	--	--	--	0.103	0.108	0.030	0.138
192 Pozol (5.9% protein, N x 6.25)	.042	0.336	0.304	0.591	.234	.087	--	--
193 Tortilla (5.8% protein, N x 6.25)	.031	.235	.345	.939	.145	.111	--	--
194 Zein (16.1% protein, N x 6.25)	.010	.495	.822	3.184	--	.281	.162	.443
195 Job's tears (13.8% protein, N x 5.83)	.066	.620	1.065	3.506	.362	.459	.265	.724
Millets:								
196 Foxtail millet (9.7% protein, N x 5.83)	.103	.323	.790	1.737	.218	.291	--	--
197 Little millet (7.2% protein, N x 5.83)	.047	.262	.517	.841	.138	.178	--	--
198 Pearlmillet (11.4% protein, N x 5.83)	.248	.456	.635	1.746	.383	.270	.152	.422
199 Ragimillet (6.2% protein, N x 5.83)	.085	.270	.398	.620	.202	.270	.187	.457
200 Oatmeal and rolled oats (14.2% protein, N x 5.83)	.183	.470	.733	1.065	.521	.209	.309	.518
201 Quinoa (11.0% protein, N x 6.25)	.120	.523	.722	.781	.729	.278	.107	.385
Rice:								
202 Brown (7.5% protein, N x 5.95)	.081	.294	.352	.646	.296	.135	.102	.237
203 White and converted (7.6% protein, N x 5.95)	.082	.298	.356	.655	.300	.137	.103	.240
Rice products:								
204 Flakes or puffed (5.9% protein, N x 5.95)	.046	--	--	--	.056	--	.044	--
205 Germ (14.2% protein, N x 5.95)	.270	2.177	.630	.838	1.707	.420	.169	.589
206 Rye (12.1% protein, N x 5.83)	.137	.448	.515	.813	.494	.191	.241	.432
Rye flour:								
207 Light (9.4% protein, N x 5.83)	.106	.348	.400	.632	.384	.148	.187	.335
208 Medium (11.4% protein, N x 5.83)	.129	.422	.485	.766	.465	.180	.227	.407
209 Sorghum (11.0% protein, N x 6.25)	.123	.394	.598	1.767	.299	.190	.183	.373
210 Teosinte (22.0% protein, N x 6.25)	.049	--	--	--	.348	.496	--	--
Wheat, whole grain:								
211 Hard red spring (14.0% protein, N x 5.83)	.173	.403	.607	.939	.384	.214	.307	.521
212 Hard red winter (12.3% protein, N x 5.83)	.152	.354	.534	.825	.338	.188	.270	.458
213 Soft red winter (10.2% protein, N x 5.83)	.126	.294	.443	.684	.280	.156	.224	.380
214 White (9.4% protein, N x 5.83)	.116	.271	.408	.630	.258	.143	.206	.349
215 Durum (12.7% protein, N x 5.83)	.157	.366	.551	.852	.348	.194	.279	.473
Wheat flour:								
216 Whole grain (13.3% protein, N x 5.83)	.164	.383	.577	.892	.365	.203	.292	.495
217 Intermediate extraction (12.0% protein, N x 5.70)	--	.392	.619	.924	.356	.198	.320	.518
218 White (10.5% protein, N x 5.70)	.129	.302	.483	.809	.239	.138	.210	.348
Wheat products:								
219 Bran (12.0% protein, N x 6.31)	.196	.342	.485	.717	.491	.145	.270	.415
220 Burghul (12.4% protein, N x 5.83)	.070	--	--	--	.430	.300	.319	.619
221 Farina (10.9% protein, N x 5.70)	.124	--	--	--	.199	.143	.184	.327
222 Flakes (10.8% protein, N x 5.70)	.121	.356	.496	.891	.360	.127	.191	.318
223 Germ (25.2% protein, N x 5.80)	.265	1.343	1.177	1.708	1.534	.404	.287	.691
224 Gluten, commercial (80.0% protein, N x 5.70)	.856	2.119	3.677	5.993	1.530	1.389	1.726	3.115
225 Gluten flour (41.4% protein, N x 5.70)	.443	1.097	1.903	3.101	.792	.719	.893	1.612
226 Macaroni or spaghetti (12.8% protein, N x 5.70)	.150	.499	.642	.849	.413	.193	.243	.436
227 Noodles, contain egg solids (12.6% protein, N x 5.70)	.133	.533	.621	.834	.411	.212	.245	.457
228 Shredded wheat (10.1% protein, N x 5.83)	.085	.405	.449	.684	.331	.139	.204	.343
229 Whole wheat with added germ (12.8% protein, N x 5.83)	.136	--	--	--	.466	--	.246	--

TABLE 2--AMINO ACID CONTENT OF FOODS, 100 GRAMS, EDIBLE PORTION--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	
--	--	--	--	--	--	--	--	--	--	--	191
0.254	--	0.267	0.197	0.122	--	--	--	--	--	--	192
.252	--	.304	.223	.128	--	--	--	--	--	--	193
1.664	0.981	.654	.286	.216	1.770	0.804	4.776	0.227	1.690	1.036	194
.703	--	--	.518	.317	--	--	--	--	--	--	195
.697	--	.717	.374	.218	--	--	--	--	--	--	196
.370	--	.471	.363	.147	--	--	--	--	--	--	197
.506	--	.682	.524	.240	--	--	--	--	--	--	198
.263	--	.473	.100	.079	--	--	--	--	--	--	199
.758	.524	.845	.935	.261	.867	.587	2.860	.646	.809	.568	200
.394	.253	.447	.820	.297	--	--	--	--	--	--	201
.377	.343	.524	.432	.126	--	.354	1.027	.513	.363	.381	202
.382	.347	.531	.438	.128	--	.359	1.041	.520	.368	.386	203
.286	.124	--	.137	.137	--	--	--	--	--	--	204
.750	.929	.938	1.559	.430	--	1.308	1.248	1.029	.869	.929	205
.571	.390	.631	.591	.276	--	--	2.573	--	--	.500	206
.443	.303	.490	.459	.214	--	--	1.999	--	--	.388	207
.538	.368	.594	.557	.260	--	--	2.424	--	--	.471	208
.547	.303	.628	.417	.211	--	--	2.411	--	--	.556	209
--	--	--	--	--	--	--	--	--	--	--	210
.691	.523	.648	.670	.286	.490	.764	4.375	.855	1.462	.646	211
.608	.460	.570	.589	.251	.430	.671	3.844	.751	1.285	.568	212
.504	.382	.472	.488	.208	.357	.556	3.188	.623	1.066	.471	213
.464	.351	.435	.450	.192	.329	.513	2.937	.574	.982	.434	214
.627	.475	.588	.608	.259	.444	.693	3.968	.775	1.326	.586	215
.657	.497	.616	.636	.271	.465	.725	4.156	.812	1.389	.614	216
.732	.335	.583	.549	.286	--	--	--	--	--	--	217
.577	.359	.453	.466	.210	.317	.455	3.653	.381	1.254	.542	218
.434	.259	.552	.742	.280	--	--	--	--	--	.633	219
--	--	--	--	--	--	--	--	--	--	--	220
.579	.447	--	.424	.268	--	--	--	--	--	--	221
.478	.311	.572	.559	.231	--	--	--	--	--	--	222
.908	.882	1.364	1.825	.687	--	--	--	--	--	--	223
4.351	2.596	3.789	3.481	1.825	1.796	2.891	2.933	2.933	10.189	3.789	224
2.252	1.344	1.961	1.801	.944	.930	1.496	1.518	1.518	5.273	1.961	225
.659	.422	.728	.582	.303	--	--	--	--	--	--	226
.610	.312	.745	.621	.301	--	--	--	--	--	--	227
.481	.236	.577	.523	.236	--	--	--	--	--	--	228
.755	.481	--	.742	.371	--	--	--	--	--	--	229

TABLE 2.--AMINO ACID CONTENT OF FOODS, 100 GRAMS, EDIBLE PORTION--CONTINUED

	ITEM, PROTEIN CONTENT, AND NITROGEN CONVERSION FACTOR	TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
							METHIONINE	CYSTINE	TOTAL
		Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.
	FRUITS (Protein, N x 6.25):								
230	Abiu (1.7% protein)................................	0.028	--	--	--	0.085	0.013	--	--
231	Avocados (1.3% protein)...........................	.014	--	--	--	.074	.012	--	--
	Bananas, ripe:								
232	Common (1.2% protein)...........................	.018	--	--	--	.055	.011	--	--
233	Dwarf (1.2% protein)............................	.012	--	--	--	.049	.004	--	--
234	Dates (2.2% protein)...............................	.061	0.061	0.074	0.077	.065	.027	--	--
235	Grapefruit (0.5% protein).........................	.001	--	--	--	.006	.000	--	--
236	Guavas, common (1.0% protein).....................	.010	--	--	--	.030	.010	--	--
237	Limes (0.8% protein)...............................	.003	--	--	--	.015	.002	--	--
238	Mamey (0.5% protein)...............................	.006	--	--	--	.040	.007	--	--
239	Mangos (0.7% protein)..............................	.014	--	--	--	.093	.008	--	--
240	Muskmelons (0.6% protein).........................	.001	--	--	--	.015	.002	--	--
241	Oranges, sweet (0.9% protein).....................	.003	--	--	--	.024	.003	--	--
242	Orange juice (0.8% protein).......................	.003	--	--	--	.021	.002	--	--
243	Oranges, mandarin including tangerines (0.8% protein)..................................	.005	--	--	--	.028	.004	--	--
244	Papayas (0.6% protein)............................	.012	--	--	--	.038	.002	--	--
245	Pineapple (0.4% protein)..........................	.005	--	--	--	.009	.001	--	--
246	Plantain or baking banana (1.1% protein)..........	.010	.027	.056	.059	.050	.005	0.016	0.021
247	Soursop (1.0% protein)............................	.011	--	--	--	.060	.007	--	--
248	Sugarapple (1.8% protein).........................	.009	--	--	--	.071	.008	--	--
	VEGETABLES:								
	IMMATURE SEEDS (Protein, N x 6.25):								
	Corn, sweet, white or yellow:								
249	Raw (3.7% protein)............................	.023	.151	.137	.407	.137	.072	.062	.134
250	Canned, solids and liquid (2.0% protein)......	.012	.082	.074	.220	.074	.039	.033	.072
251	Cowpeas (9.4% protein)...........................	.099	.353	.465	.653	.617	.131	--	--
	Lima beans:								
252	Raw (7.5% protein)............................	.097	.338	.460	.605	.474	.080	.083	.163
253	Canned, solids and liquid (3.8% protein)......	.049	.171	.233	.306	.240	.041	.042	.083
	Peas:								
254	Raw (6.7% protein)............................	.056	.245	.308	.418	.316	.054	.073	.127
255	Canned, solids and liquid (3.4% protein)......	.028	.125	.156	.212	.160	.027	.037	.064
	LEAFY VEGETABLES, RAW (Protein, N x 6.25):								
256	Amaranth (3.5% protein).........................	.038	.056	.164	.206	.141	.025	.024	.049
257	Beet greens (2.0% protein)......................	.024	.076	.084	.129	.108	.034	--	--
258	Brussels sprouts (4.4% protein).................	.044	.153	.186	.194	.197	.046	--	--
259	Cabbage (1.4% protein)..........................	.011	.039	.040	.057	.066	.013	.028	.041
260	Chard (1.4% protein)............................	.014	.058	.060	.076	.055	.004	--	--
261	Chicory (1.6% protein)..........................	.024	--	--	--	.052	.016	.006	.022
262	Collards (3.9% protein).........................	.055	.114	.121	.218	.202	.046	.059	.105
263	Kale (3.9% protein).............................	.042	.139	.133	.252	.121	.035	.036	.071
264	Lettuce (1.2% protein)..........................	.012	--	--	--	.070	.004	--	--
265	Mustard greens (2.3% protein)...................	.037	.060	.075	.062	.111	.024	.035	.059
266	Parsley, curly garden (2.5% protein)............	.050	--	--	--	.160	.012	--	--
267	Spinach (2.3% protein)..........................	.037	.102	.107	.176	.142	.039	.046	.085
268	Turnip greens (2.9% protein)....................	.045	.125	.107	.207	.129	.052	.045	.097
269	Watercress (1.7% protein).......................	.028	.084	.076	.131	.091	.010	--	--

TABLE 2.--AMINO ACID CONTENT OF FOODS, 100 GRAMS, EDIBLE PORTION--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	
--	--	--	--	--	--	--	--	--	--	--	230
--	--	--	--	--	--	--	--	--	--	--	231
--	0.031	--	--	--	--	--	--	--	--	--	232
--	--	--	--	--	--	--	--	--	--	--	233
0.063	--	0.094	0.049	0.049	--	--	--	--	--	--	234
--	--	--	--	--	--	--	--	--	--	--	235
--	--	--	--	--	--	--	--	--	--	--	236
--	--	--	--	--	--	--	--	--	--	--	237
--	--	--	--	--	--	--	--	--	--	--	238
--	--	--	--	--	--	--	--	--	--	--	239
--	--	--	--	--	--	--	--	--	--	--	240
--	--	--	--	--	--	--	--	--	--	--	241
--	--	--	--	--	--	--	--	--	--	--	242
--	--	--	--	--	--	--	--	--	--	--	243
--	--	--	--	--	--	--	--	--	--	--	244
--	--	--	--	--	--	--	--	--	--	--	245
.049	--	.065	.045	--	--	0.120	0.192	--	--	--	246
--	--	--	--	--	--	--	--	--	--	--	247
--	--	--	--	--	--	--	--	--	--	--	248
.207	.124	.231	.174	.095	--	--	--	--	--	--	249
.112	.067	.125	.094	.052	--	--	--	--	--	--	250
.523	--	.513	.615	.310	--	--	--	--	--	--	251
.389	.259	.485	.454	.247	--	--	--	--	--	--	252
.197	.131	.246	.230	.125	--	--	--	--	--	--	253
.257	.163	.274	.595	.109	0.196	.639	.474	0.217	--	--	254
.131	.083	.139	.302	.055	.100	.324	.240	.110	--	--	255
.096	.105	.136	.134	.069	.280	.252	.322	--	--	--	256
.116	--	.101	.083	.026	--	--	--	--	--	--	257
.148	--	.193	.279	.106	--	--	--	--	--	--	258
.030	.030	.043	.105	.025	.071	.196	.266	--	--	0.042	259
.046	--	.055	.035	.018	--	--	--	--	--	--	260
--	.040	--	--	.024	--	--	--	--	--	--	261
.124	.151	.195	.258	.087	--	--	--	--	--	--	262
.158	--	.184	.202	.062	.064	--	--	--	--	--	263
--	--	--	--	--	--	--	--	--	--	--	264
.074	.121	.108	.167	.041	--	--	--	--	--	--	265
--	--	--	--	--	--	--	--	--	--	--	266
.099	.073	.126	.116	.049	.073	--	.289	--	--	--	267
.146	.105	.149	.167	.051	--	--	--	--	--	--	268
.062	.036	.084	.053	.034	.060	.242	.163	--	--	--	269

TABLE 2.--AMINO ACID CONTENT OF FOODS, 100 GRAMS, EDIBLE PORTION--CONTINUED

	ITEM, PROTEIN CONTENT, AND NITROGEN CONVERSION FACTOR	TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
							METHIONINE	CYSTINE	TOTAL
		Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.
	VEGETABLES--Continued								
	STARCHY ROOTS AND TUBERS (Protein, N x 6.25):								
270	Apio arracacia (1.2% protein)...................	0.008	--	--	--	0.042	0.003	--	--
	Cassava:								
271	Flour (1.6% protein)..........................	.021	0.044	0.045	0.066	.066	.010	0.018	0.028
272	Root (1.1% protein)...........................	.014	.030	.031	.045	.045	.007	.012	.019
	Potatoes:								
273	Raw (2.0% protein)............................	.021	.079	.088	.100	.107	.025	.019	.044
274	Canned, solids and liquid (1.7% protein)......	.018	.067	.075	.085	.091	.021	.016	.037
275	Flour (7.1% protein)..........................	.076	.279	.311	.353	.378	.089	.068	.157
	Sweetpotatoes (Ipomaea batatas):								
276	Raw (1.8% protein)............................	.031	.085	.087	.103	.085	.033	.029	.062
277	Dehydrated (5.0% protein).....................	.087	.235	.241	.286	.236	.093	.080	.173
278	Taro (1.9% protein).............................	.035	.089	.099	.169	.110	.021	--	--
279	Yam (Dioscorea spp.) (2.1% protein).............	.035	--	--	--	.110	.034	--	--
280	Yautia malanga (1.7% protein)...................	.023	--	--	--	.067	.016	--	--
	OTHER VEGETABLES (Protein, N x 6.25):								
	Asparagus:								
281	Raw (2.2% protein)............................	.027	.066	.080	.096	.103	.032	--	--
282	Canned, solids and liquid (1.9% protein)......	.023	.057	.069	.083	.089	.027	--	--
	Beans, snap:								
283	Raw (2.4% protein)............................	.033	.091	.109	.139	.126	.035	.024	.059
284	Canned, solids and liquid (1.0% protein)......	.014	.038	.045	.058	.052	.014	.010	.024
	Beets:								
285	Raw (1.6% protein)............................	.014	.034	.051	.055	.086	.006	--	--
286	Canned, solids and liquid (0.9% protein)......	.008	.019	.029	.031	.048	.003	--	--
287	Broccoli (3.3% protein).........................	.037	.122	.126	.163	.147	.050	--	--
	Carrots:								
288	Raw (1.2% protein)............................	.010	.043	.046	.065	.052	.010	.029	.039
289	Canned, solids and liquid (0.5% protein)......	.004	.018	.019	.027	.022	.004	.012	.016
290	Cauliflower (2.4% protein)......................	.033	.102	.104	.162	.134	.047	--	--
291	Celery (1.3% protein)...........................	.012	--	--	--	.021	.015	.006	.021
292	Chayote (0.6% protein)..........................	.008	--	--	--	.038	.001	--	--
293	Cowpeas, yardlong, immature pod (3.4% protein)..	.034	--	--	--	.203	.021	--	--
294	Cucumbers (0.7% protein)........................	.005	.019	.022	.030	.031	.007	--	--
295	Cushaw (1.5% protein)...........................	.014	--	--	--	.044	.008	--	--
296	Eggplant (1.1% protein).........................	.010	.038	.056	.068	.030	.006	--	--
297	Mallow (3.7% protein)...........................	.144	.155	--	.259	.155	.030	--	--
	Mushrooms:								
298	(Agaricus campestris) 1/......................	.006	--	.532	.281	--	.167	--	--
299	(Lactarius spp.) 2/...........................	.006	.156	.201	.139	.088	.021	--	--
300	Okra (1.8% protein).............................	.018	.066	.069	.101	.076	.022	.017	.039
301	Onions, mature (1.4% protein)...................	.021	.022	.021	.037	.064	.013	--	--
302	Peppers (1.2% protein)..........................	.009	.050	.046	.046	.051	.016	--	--
303	Pricklypears (1.1% protein).....................	.009	.053	.044	.057	.044	.008	--	--
304	Pumpkin (1.2% protein)..........................	.016	.028	.044	.063	.058	.011	--	--
305	Radishes (1.2% protein).........................	.005	.059	--	--	.034	.002	--	--

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1/ Total nitrogen is 0.58%. This is equivalent to 2.4% protein on the basis that 2/3 of the nitrogen is protein nitrogen. If total nitrogen is used for the calculation, the protein content is 3.6%.

2/ Total nitrogen is 0.69%. This is equivalent to 2.9% protein on the basis that 2/3 of the nitrogen is protein nitrogen. If total nitrogen is used for the calculation, the protein content is 4.3%.

TABLE 2.--AMINO ACID CONTENT OF FOODS, 100 GRAMS, EDIBLE PORTION--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	
--	--	--	--	--	--	--	--	--	--	--	270
0.045	0.030	0.049	0.159	0.025	0.081	0.085	0.195	0.045	0.036	0.042	271
.031	.021	.033	.110	.017	.056	.058	.134	.031	.024	.029	272
.088	.036	.107	.099	.029	.093	--	.200	--	.067	.080	273
.075	.030	.091	.084	.024	.079	--	.170	--	.057	.068	274
.314	.127	.379	.350	.102	.332	--	.710	--	.236	.284	275
.100	.081	.135	.094	.036	--	--	.334	--	--	.046	276
.278	.225	.374	.261	.099	--	--	.926	--	--	.126	277
.099	--	.114	.118	.032	--	--	--	--	--	--	278
--	--	--	--	--	--	--	--	--	--	--	279
--	--	--	--	--	--	--	--	--	--	--	280
.069	--	.106	.123	.036	--	--	--	--	--	--	281
.060	--	.092	.106	.031	--	--	--	--	--	--	282
.057	.050	.115	.101	.045	.097	--	--	--	--	--	283
.024	.021	.048	.042	.019	.040	--	--	--	--	--	284
.027	--	.049	.028	.022	--	.157	.256	--	.029	--	285
.015	--	.028	.016	.012	--	.089	.144	--	.017	--	286
.119	--	.170	.192	.063	--	--	--	--	--	--	287
.042	.020	.056	.041	.017	.058	.090	.218	--	--	.038	288
.018	.008	.023	.017	.007	.024	.037	.091	--	--	.016	289
.075	.034	.144	.110	.048	.192	.199	.185	.165	--	--	290
--	.016	--	--	--	--	--	--	--	--	--	291
--	--	--	--	--	--	--	--	--	--	--	292
--	--	--	--	--	--	--	--	--	--	--	293
.016	--	.024	.053	.001	--	--	--	--	--	--	294
--	--	--	--	--	--	--	--	--	--	--	295
.048	--	.065	.037	.019	--	--	--	--	--	--	296
.166	--	.181	.189	.063	--	--	--	--	--	--	297
--	--	.378	.235	--	--	--	--	--	--	--	298
.018	--	.116	.021	.027	--	--	--	--	--	--	299
.065	.079	.091	.093	.030	--	--	--	--	--	--	300
.039	.046	.031	.180	.014	--	--	.208	--	--	--	301
.055	--	.033	.024	.014	--	--	--	--	--	--	302
.059	--	.041	.032	.016	--	--	--	--	--	--	303
.032	.016	.045	.043	.019	.064	--	.144	--	--	.032	304
--	--	.030	--	--	--	.103	.251	--	--	.059	305

TABLE 2.--AMINO ACID CONTENT OF FOODS, 100 GRAMS, EDIBLE PORTION--CONTINUED

ITEM, PROTEIN CONTENT, AND NITROGEN CONVERSION FACTOR	TRYPTOPHAN	THREONINE	ISOLEUCINE	LEUCINE	LYSINE	SULFUR CONTAINING		
						METHIONINE	CYSTINE	TOTAL
	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.
VEGETABLES--Continued								
OTHER VEGETABLES (Protein, N x 6.25)--Continued								
306 Seepweed (2.6% protein)	0.027	0.089	0.113	0.152	0.089	0.013	--	--
307 Soybean sprouts (6.2% protein)	--	.159	.225	.265	.211	.045	--	--
308 Squash, summer (0.6% protein)	.005	.014	.019	.027	.023	.008	--	--
309 Tomatoes and cherry tomatoes (1.0% protein)	.009	.033	.029	.041	.042	.007	--	--
310 Turnips (1.1% protein)	--	--	.020	--	.057	.012	--	--
311 Waxgourd, Chinese (0.4% protein)	.002	--	--	--	.009	.003	--	--
MISCELLANEOUS FOOD ITEMS:								
312 Vegetable patty or steak (principally wheat protein) (15% protein, N x 5.70)	.142	.411	.884	1.079	.321	.253	--	--
Yeast:								
313 Baker's, compressed (3/, N x 6.25)	.122	.655	.655	1.151	.914	.248	0.120	0.368
314 Brewer's, dried (4/, N x 6.25)	.710	2.353	2.398	3.226	3.300	.836	.548	1.384
Primary, dried:								
315 (Saccharomyces cerevisiae) (4/, N x 6.25)	.636	2.353	2.708	3.300	3.337	.851	.444	1.295
316 (Torulopsis utilis) (4/, N x 6.25)	.636	2.331	3.323	3.707	3.648	.710	.422	1.132

3/ Total nitrogen is 2.1%. This is equivalent to 10.6% protein on the basis that 4/5 of the nitrogen is protein nitrogen. If total nitrogen is used for the calculation, the protein content is 13.1%.

4/ Total nitrogen is 7.4%. This is equivalent to 36.9% protein on the basis that 4/5 of the nitrogen is protein nitrogen. If total nitrogen is used for the calculation, the protein content is 46.1%.

TABLE 2.--AMINO ACID CONTENT OF FOODS, 100 GRAMS, EDIBLE PORTION--CONTINUED

PHENYL-ALANINE	TYROSINE	VALINE	ARGININE	HISTIDINE	ALANINE	ASPARTIC ACID	GLUTAMIC ACID	GLYCINE	PROLINE	SERINE	ITEM NUMBER
Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	Gm.	
0.116	--	0.091	0.062	0.036	--	--	--	--	--	--	306
.186	--	.225	.225	.133	--	--	--	--	--	--	307
.016	--	.022	.027	.009	--	--	--	--	--	--	308
.028	0.014	.028	.029	.015	0.051	0.108	0.238	0.033	--	0.033	309
.020	.029	--	--	--	.066	--	--	--	--	--	310
--	--	--	--	--	--	--	--	--	--	--	311
.811	--	.705	.597	.321	--	--	--	--	--	--	312
.607	.580	.840	.536	.353	1.201	1.596	2.432	.788	0.519	.630	313
1.902	1.902	2.723	2.250	1.251	3.456	5.232	6.334	2.427	1.983	2.657	314
1.813	2.472	2.553	1.931	1.103	1.339	2.501	5.742	1.702	--	2.131	315
2.361	2.464	2.901	3.337	1.251	--	--	6.357	3.145	--	--	316

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